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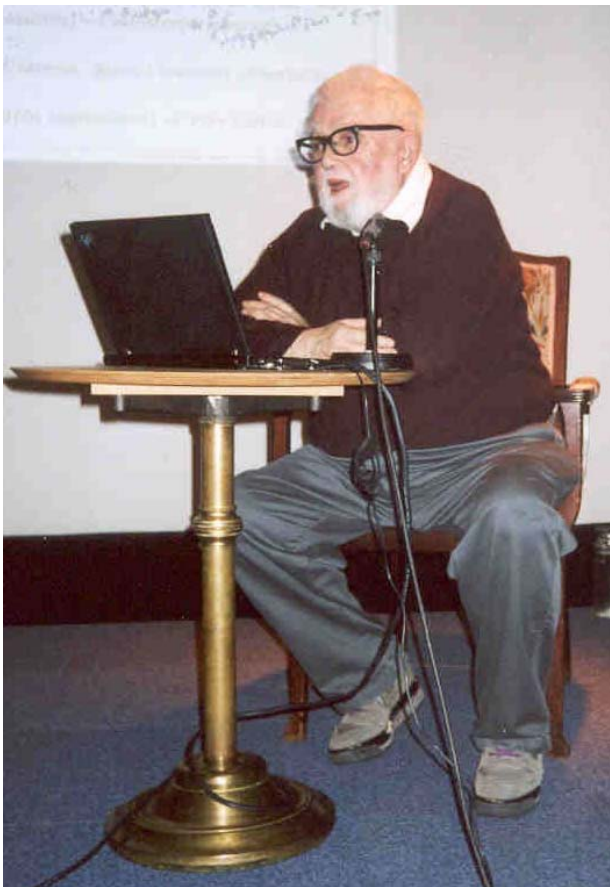

Finite Geometries, part 2

Philosophy of Information

Computational Intelligence and Games

News from the Belgium-Netherlands Association for Artificial Intelligence

Call for Cooperation

Editor-in-chief

The AI community flourishes as never before. This is evidenced by several factors. Just look at the number of Calls for Papers in this issue. Another witness is the start of a new university, in Luxembourg, including an AI department (see p. 28 of this issue). We hope that this will soon lead to the entry of the first Luxembourg group into our community. Some of the most important prerequisites for flourishing are of course doing high-quality research, organising and participating in AI events (like our BNAICs) and cooperating. So just let me add a few Calls for Cooperation.

First, our editor for Belgium, Joris van Looveren, recently finished his M.Sc., for which we congratulate him. While still working at the university, he no longer is active in the AI field and he therefore decided to step down as editor. Of course we thank him for his devotion to our newsletter for years on end. Further, I invite Belgian members of our community to consider taking over his task. If you are interested, just send an email to newsletter@cs.unimaas.nl.

Second, Jaap van den Herik reports as usual on the outcome of Ph.D. students (pp. 39-40 of this issue). He states that an essential part of a Ph.D. should be reading each other's theses. An obliged reading and reviewing of other Ph.D. students' theses should even be part of SIKS' educational program and the reviews should be published in, e.g., the *BNVKI Newsletter*. Obliged or not, I wholeheartedly endorse his call for publication of Ph.D. thesis reviews.

Thirdly, in the previous issue of this newsletter we announced the publication of special issues. We have made the following provisional schedule: August 2005: special issue on agent technology and multi-agent systems; October 2005: special issue on computer games and game-playing techniques; December 2005: special issue on neural networks and adaptive behaviour. Of course we will contact researchers in the field to send in contributions, but I already call up any group doing research in these fields to provide me with short (say, 1-page) descriptions of their group activities and most noteworthy results.

Besides many calls, this issue also contains the second part of Henk Visser's article on Finite Geometries. Another account is on a notable event, a Public Symposium on the Philosophy of Information, including as speaker one of the founding fathers of AI, prof. John McCarthy (front cover and at the very right end at the picture below). We wish you a lot of cooperation!

The participants of the Public Symposium on the Philosophy of Information in front of the KNAW Trippenhuis.

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The photographs in this issue are by courtesy of Jaap van den Herik

Picture on the front cover:
Professor J. McCarthy in action during the Public Symposium on the Philosophy of Information.

The deadline for the next issue is: **May 23, 2005**

BNVKI-Board News

Han La Poutré

When I am writing this, I am experiencing the first days that show that we are approaching a nice summer. For most of us, this means a pleasant time and a holiday period. And a period of travelling for our work: conferences, summer schools, workshops and research visits.

At the moment, several people are working hard to make this happen. We can see the preliminary programs of AAMAS (Utrecht), IJCAI (Edinburgh) and other conferences, which look very appealing. Also, for Ph.D. students, the European Agent Systems Summer School (EASSS) will take place in Utrecht, just before AAMAS conference.

Simultaneously, preparations for several conferences in the fall have started as well, this time especially in Belgium: Brussels. As you all know, the upcoming BNAIC is held in Brussels and I'm sure you will not forget to submit your best papers to it. Also, the European Workshop on Multiagent Systems (EUMAS) will be held in Brussels, in December. So, for the agent research community, Belgium and the Netherlands are two lively places to meet this year.

Finally, last but not least: the BNAIS conference for students will take place in Nijmegen, in November. Enthusiastic AI students of the Radboud University in Nijmegen have started to organise this, to make this a successful event. As the counterpart of the BNAIC, the BNAIS is an important meeting place for (Master) students, where senior AI researchers are more than welcome to contribute or just to meet.

So, many meeting places in the remainder of this year, and you don't have to travel far to attend. See you there.

AI in Luxembourg

The Board of BNVKI

With much pleasure we publish part of our communication with our colleague from Liege, Professor Pierre Yves Schobbens. He informed us on the birth of the University of Luxembourg. Some of our members may know that Emil Weydert has already returned to Luxembourg to take up a position. It is expected that a second AI position soon will be opened.

With a BNAIC in Brussels at the end of this year, we believe it is a good opportunity to strengthen the ties between Belgium and The Netherlands on the one hand and Luxembourg on the other hand. It certainly will help to achieve a fast integration of Luxembourg in the Belgium-Dutch AI world, transforming it into the BeNeLux AI world.

The BNVKI welcomes the new Luxembourg members with much pleasure. We invite the Luxembourg AI committee to introduce themselves in one of the next issues of the *BNVKI Newsletter*.

Finite Geometries, Part 2

Henk Visser
Haarlem

This is the follow-up to Finite Geometries, Part 1, published in the *BNVKI Newsletter*, Vol. 22, No. 1, pp. 4-8.

FINITE CIRCLE GEOMETRIES

In order to get an idea of some possibilities of projective circle geometry, it is wise to consider the following axioms:

I. for each two distinct points, there are exactly two circles containing them both
II. for each two distinct circles, there are exactly two points contained by both

That it is simple to satisfy these first two axioms, is shown by the following picture (Figure 7):

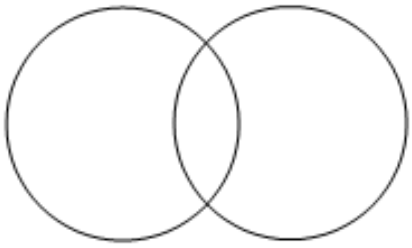

Fig. 7

As usual, trivial models are eliminated by two more axioms:

III. not all points are on the same circle
IV. there exists at least one circle

If we want as few circles as possible, we get the following model (Figure 8):

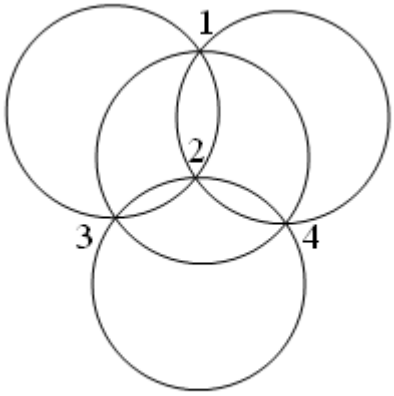

Fig. 8

It also satisfies a special axiom:

V. every circle contains exactly three points

Moreover:

VI. for each three distinct points, there is exactly one circle containing them all

VII. for each three distinct circles, there is exactly one point contained by all

Notice that there are only four points and four circles. But as soon as there are more points, the first two axioms (I, II) and the last two axioms (VI, VII) cannot be satisfied simultaneously. (Suppose that there are five points, 1, 2, 3, 4 and 5, then there are not only circles through 1, 2 and 3 and through 1, 2 and 4, but also through 1, 2, and 5 according to axiom VI, but this would imply that there are three circles through the points 1 and 2, contrary to axiom I.) Moreover, axiom VI is not a familiar one, as my colleague Floris Wiesman remarked. What he had in mind was the Euclidean proposition that for each three distinct points *not on one and the same line* there is exactly one circle containing them all.

Before going to projective circle geometries with more than three points on every circle, we can have a look at the following obvious numerical representation of the model of Figure 8:

123
234
341
412

Its cyclical nature suggests the following representation of the circle formed by the first three points – in the form of a triangle that can be rotated to get the representations of the other circles (Figure 9):

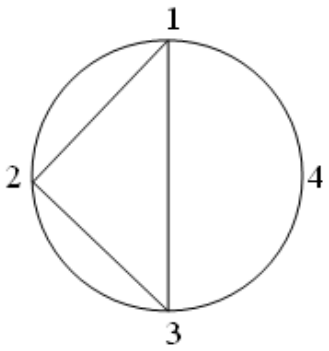

Fig. 9

Apparently it can be regarded as the result of a partition, namely that of 4:

$$4 = 1 + 1 + 2$$

It is easily verified that each number below 4 appears exactly twice as a partial sum, and this is just as it needs to be, if we want to satisfy axiom II. This suggests in its turn that models for line geometries with more than three points on every circle may be found by partitions with this property.

Suppose we require that every circle contains exactly four instead of three points:

V(4). Every circle contains exactly four points

In order to construe a model for the axioms I, II, III, IV and V(4), we look for a suitable partition of 7. (7 is one more than the number of circles that each have two points in common with the circle through the points 1, 2, 3 and 4.) We find:

$$7 = 1 + 1 + 2 + 3$$

It follows that the seven circles can be read off from the following picture (Figure 10):

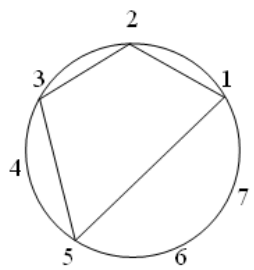

Fig. 10

This picture is remarkable, because the points that are as yet unconnected, 4, 6, and 7, form a triangle that generates all the lines of a model for the projective line geometry we started with (Figure 11):

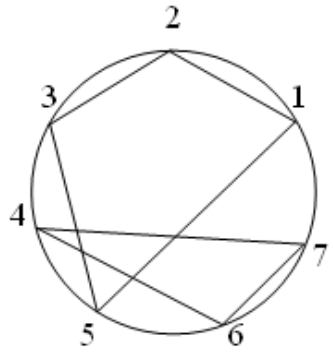

Fig. 11

Therefore our model for the projective *circle* geometry with the property that every circle contains exactly four points and the model for the projective *line* geometry with the property that every line contains exactly three points can be combined in a model for the following axiom system:

1. for each two distinct points, there is exactly one line containing them both
2. for each two distinct lines, there is exactly one point contained by both
3. not all points are on the same line
4. there exists at least one line
5. every line contains exactly three points
6. for each two distinct points, there are exactly two circles containing them both
7. for each two distinct circles, there are exactly two points contained by both
8. not all points are on the same circle
9. there exists at least one circle
10. every circle contains exactly four points
11. for each three distinct points not on the same line there is exactly one circle containing them all

Now we understand that Fano's projective plane can be extended to the following perspicuous picture (Figure 12):

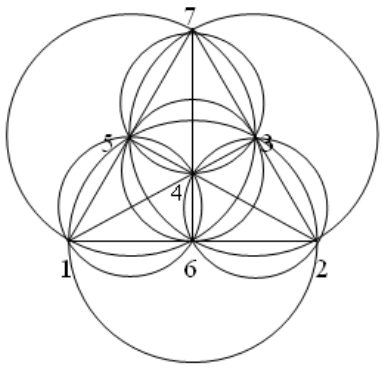

Fig. 12

(Notice that the points 3, 5, 6 form a "line", and the points 7, 1, 2, 4 a "circle".)

Together there are seven circles and seven lines, which we can represent numerically as follows:

1235 467
2346 571
3457 612
4561 723
5672 134
6713 245
7124 356

Again we can modify the axiom that every circle contains exactly four points into

V(5). Every circle contains exactly five points

In order to construe a model for the axioms I, II, III, IV and V(5), we look again for a suitable partition, this time a partition of 11, and the first guess is the hit on the nail:

$$11 = 1 + 1 + 2 + 3 + 4$$

The eleven circles can be extracted from the following picture (Figure 13):

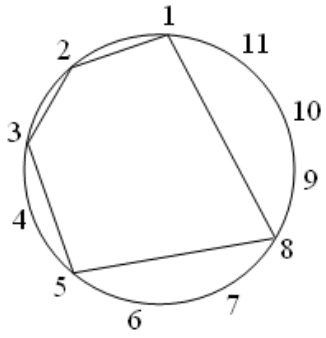

Fig. 13

There are no theoretically different partitions than the given one. It was again my colleague Jeroen Donkers whose computer program also checked the possibilities for partitions in order to find models for the projective circle geometries with, respectively, six, seven, eight and nine points on every circle. Dr. Donkers found that only the last geometry, that is the set of axioms, I, II, III, IV and V(9), has models:

$$37 = 1 + 3 + 2 + 4 + 5 + 2 + 1 + 7 + 12$$
$$37 = 1 + 2 + 4 + 10 + 7 + 1 + 4 + 6 + 2$$

We leave projective circle geometry and proceed to projective affine geometry. The central idea is, of course that every circle has exactly one "opposite", that is a circle which has no points in common with it. So if there is a circle through three given points, then there are three more points that are contained by its opposite, together already six points. This leads to the question whether we can make minimal models with exactly six points. Fortunately we have learned from affine line geometry that we have to draw a circle with five points on it, because its centre also represents a point of an affine model (Figure 14):

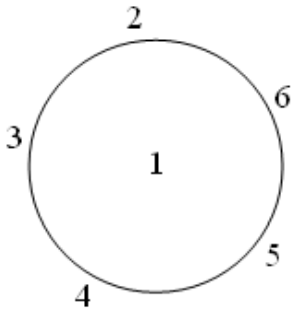

Fig. 14

There are exactly two partitions of 5:

$$5 = 1 + 1 + 3$$
$$5 = 1 + 2 + 2$$

Both lead to a set of circles, generated by the following pictures (Figure 15 and 16):

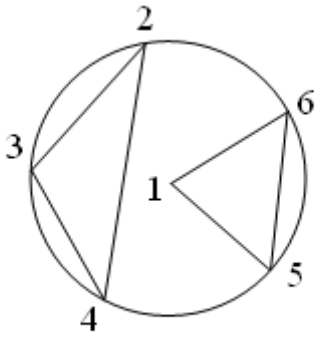

Fig. 15

234 156
345 162
456 123
562 134
623 145

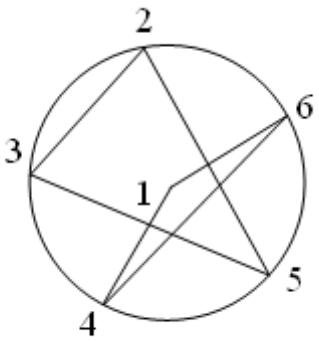

Fig. 16

235 146
346 152
452 163
563 124
624 135

I did not call these sets "models", because we have as yet not made our choice for an axiom system. This is an advantage if we want an affine circle geometry that is as "promising" as possible, that is, still has models for axioms of the form "every circle contains exactly *n* points" for "higher" values of *n*.

Nevertheless it is interesting to see that each of the above two sets is a model of the following axiom system:

I. for each two distinct points, there are exactly two circles containing them both

II. through each two distinct points not on a given circle there is exactly one circle which does not meet the given circle
III. not all points are on the same circle
IV. there exists at least one circle
V. every circle contains exactly three points

Notice that it is not the case that for each three distinct points, there is exactly one circle containing them all. We can achieve this by uniting the two sets to a model of a different axiom system:

I. for each two distinct points, there are exactly *four* circles containing them both
II. through each two distinct points not on a given circle there is exactly one circle which does not meet the given circle
III. not all points are on the same circle
IV. there exists at least one circle
V. every circle contains exactly three points
VI. for each three distinct points, there is exactly one circle containing them all

It is clear that we cannot draw a traditional picture of this model with twenty circles and six points that is as perspicuous as Figure 8. Already the ten circles of the first set present difficulties.

Let us now see what happens when we postulate that every circle contains exactly four points. It is clear that we need at least eight points and this means that we can proceed from a circle with seven points on it and a centre that joins them. Nothing is easier than to use the same partition of 7 as that of the corresponding projective geometry:

$$7 = 1 + 1 + 2 + 3$$

and add the centre of the circle to the slightly modified picture of Figure 10 (Figure 17):

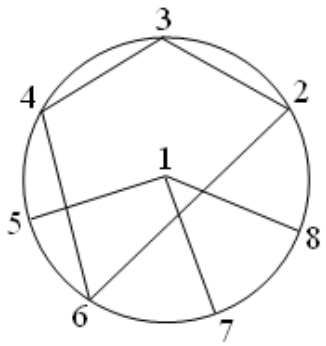

Fig. 17

2346 1578
3457 1682
4568 1723
5672 1834
6783 1245
7824 1356
8235 1467

We are now ready to formulate the axiom system which has this set of circles as a model:

I. for each two distinct points, there are exactly two circles containing them both
II. through each two distinct points not on a given circle there is exactly one circle which does not meet the given circle; let us call the latter circle "separate" from the former and conversely, and both circles "separate" from each other
III. not all points are on the same circle
IV. there exists at least one circle
V. every circle contains exactly four points
VI. for each three distinct points, there is exactly one circle containing them all

Here we have all the "standard" axioms, but we have also:

VII. for each two distinct circles that are not separate from each other, there are exactly two points contained by both

It is useful to discern such special axioms, as long as we have no uniform theory for affine circle geometries. In the end, we hope to have a set of axioms that enables us to formulate interesting problems about the existence or non-existence of models, for we cannot expect that every axiom of the form "every circle contains exactly *n* points" can be satisfied.

At first sight, one might think that the partition of 11 that was used in projective circle geometry might help us to find a model for an affine circle geometry with the property that every circle contains exactly five points:

$$11 = 1 + 1 + 2 + 3 + 4$$

"Just add a twelfth point and determine for the circle 1 2 3 5 8, or, in general for every circle of the form x, $x + 1$, $(x + 1) + 1$, $((x + 1) + 1) + 2$, $(((x + 1) + 1) + 2) + 3$, a circle containing the point 12 that is apart from it."

However, none of the 15 combinations gives the desired result. For example, 7 9 10 11 12, which is apart from 1 2 3 5 8, has three points in common with 9 10 11 2 5 and similar violations of the axiom that there is at most one circle through three distinct points occur with the other combinations.

Nevertheless we stick to the method of transposition by looking for suitable partitions. Fortunately I found among the different partitions of 12 one special one that provided me with a model for such an affine circle geometry:

$$12 = 1 + 1 + 2 + 5 + 3$$

What makes it so special is that it is "incomplete" in the sense that not every number under 12 is the outcome of two partial sums: 6 and only 6 does not occur as a sum in this partition. What this implies appears from the following numerical model generated by the partition:

1	2	3	5	10
2	3	4	6	11
3	4	5	7	12
4	5	6	8	1
5	6	7	9	2
6	7	8	10	3
7	8	9	11	4
8	9	10	12	5
9	10	11	1	6
10	11	12	2	7
11	12	1	3	8
12	1	2	4	9

Inspection reveals that there is for every circle exactly one circle that is apart from the given circle:

1	2	3	5	10		7	8	9	11	4
2	3	4	6	11		8	9	10	12	5
3	4	5	7	12		9	10	11	1	6
4	5	6	8	1		10	11	12	2	7
5	6	7	9	2		11	12	1	3	8
6	7	8	10	3		12	1	2	4	9

However, it is not the case that there is exactly one circle for each two distinct points not on a given circle which is apart from the given circle. There is neither any circle at all through 6 and 12, nor through 7 and 1, in general not through the pairs of points 1 7, 2 8, 3 9, 4 10, 5 11, 6 12. Neither the above axiom I, nor axiom II is satisfied by this set of circles.

But now look at the following picture (Figure 18):

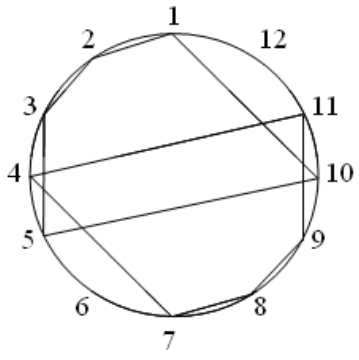

Fig. 18

Nothing is easier to imagine than that the points 6 and 12 lie outside the disjunct circles 1 2 3 5 10 and 7 8 9 11 4. This can be used when we make an attempt to draw the first four circles as if they were part of a Euclidean plane (Figure 19):

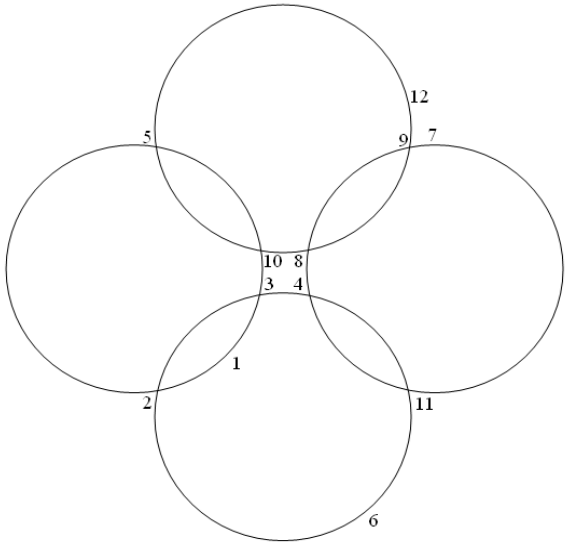

Fig. 19

Then we can even add the fifth circle, 3 4 5 7 12 (Figure 20):

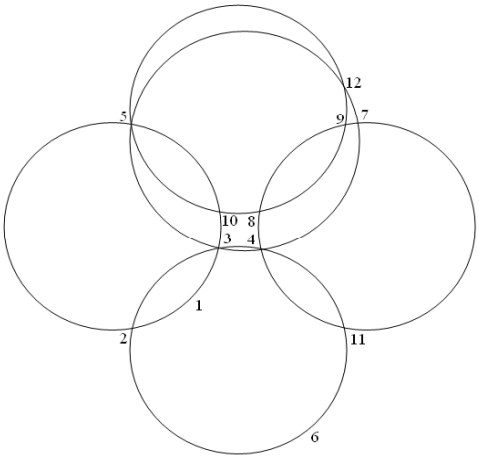

Fig. 20

Similarly, the sixth circle, 9 10 11 1 6, could be added, albeit in the form of an oval figure, etc.

The existence of such a simple model suggests that we should look for similar incomplete partitions as the above partition of 12, and preferably partitions with relatively few holes. As usual, "the computer" helped us to find models which our "intuition" could not give us. It appeared, again thanks to Dr. Donkers' program, that there is no number that can be written as a sum of six numbers with that property. This dashes our hopes to find an affine circle geometry with the axiom that every circle contains exactly six points. But then there was the number 24, with the following partitions with seven components:[1]

24 = 11 + 2 + 3 + 1 + 4 + 2 + 1 with holes 9 and 15
24 = 11 + 2 + 1 + 4 + 2 + 3 + 1 with holes 8 and 16
24 = 10 + 3 + 4 + 2 + 3 + 1 + 1 with holes 8 and 16
24 = 10 + 2 + 2 + 1 + 3 + 5 + 1 with holes 7 and 17
24 = 9 + 6 + 1 + 3 + 2 + 2 + 1 with holes 11 and 13
24 = 9 + 3 + 3 + 2 + 5 + 1 + 1 with holes 4 and 20
24 = 9 + 1 + 6 + 2 + 3 + 2 + 1 with holes 4 and 20
24 = 7 + 5 + 2 + 4 + 4 + 1 + 1 with holes 3 and 21
24 = 7 + 3 + 6 + 4 + 2 + 1 + 1 with holes 5 and 19
24 = 5 + 5 + 3 + 3 + 4 + 2 + 2 with holes 1 and 23

The first partition leads to an affine geometry with an axiom that is again different from the standard one, according to which there would be for each two distinct points not on a given circle exactly one circle which is apart from the given circle. Consider, for example, the first circle of the first partition: 1 12 14 17 18 22 24. After nine rotations the tenth circle becomes: 10 21 23 2 3 7 9, and after fifteen rotations we get: 16 3 5 8 9 13 15. Both circles contain the points 3 and 9, and both are apart from the first circle.

Similar conclusions hold for the other partitions, only the second and the third partitions deserve special attention, because of the periodical character of the holes. For example, the second partition, 24 = 11 + 2 + 1 + 4 + 2 + 3 + 1, generates the following circles:

1 12 14 15 19 21 24	9 20 22 23 3 5 8	17 4 6 7 11 13 16
2 13 15 16 20 22 1	10 21 23 24 4 6 9	18 5 7 8 12 14 17
3 14 16 17 21 23 2	11 22 24 1 5 7 10	19 6 8 9 13 15 18
4 15 17 18 22 24 3	12 23 1 2 6 8 11	20 7 9 10 14 16 19
5 16 18 19 23 1 4	13 24 2 3 7 9 12	21 8 10 11 15 17 20
6 17 19 20 24 2 5	14 1 3 4 8 10 13	22 9 11 12 16 18 21
7 18 20 21 1 3 6	15 2 4 5 9 11 14	23 10 12 13 17 19 22
8 19 21 22 2 4 7	16 3 5 6 10 12 15	24 11 13 14 18 20 23

[1] The partitions are presented with the largest number first, in agreement with the print out of the computer.

The upper circles of the first row, 1 12 14 15 19 21 24, 9 20 22 23 3 5 8, and 17 4 6 7 11 13 16 have now no points in common, but none of them contains the points 2 or 10 or 18. It follows that it is not the case that there is exactly one circle through each two distinct points not on a given circle which is apart from the given circle, although there is never more than one such a circle.

By inspection, we notice that none of the circles contain the pairs of points 1 9, 2 10, 3 11, 4 12, …, 16 24, 17 1, 18 2, …, 24 8 and hence we conclude that it is not the case that for each two distinct points there are exactly two circles containing them both. In this respect the affine circle geometry with 24 points is similar to that with 12 points. The question is how to characterize in geometrical terms the set of pairs of points that violates the axioms I and II. The situation is clear: for every two circles that are separate from each other, there is for every point contained by the first circle precisely one point contained by the other circle, such that both points are not together contained by any circle at all. We may call such points "unconnected". Thus there is a certain duality between separate circles and unconnected points. In this respect, this model is similar to the model that resulted from the partition of 12, 12 = 1 + 1 + 2 + 5 + 3. Is this incidental?

The next incomplete partitions found by Dr. Donkers occurred with 40:

40 = 14 + 7 + 2 + 4 + 5 + 3 + 3 + 1 + 1 with holes 10, 20, and 30

40 = 13 + 6 + 2 + 1 + 2 + 4 + 7 + 1 + 4 with holes 10, 20, and 30

Apparently each of these partitions leads to four sets of circles. The first members produced by the first partition, are, respectively,

1, 15, 22, 24, 28, 33, 36, 39, 40
11, 25, 32, 34, 38, 3, 6, 9, 10
21, 35, 2, 4, 8, 13, 16, 19, 20, 21
31, 5, 12, 14, 18, 23, 26, 29, 30, 31

None of them contains the points 7, 17, 27, and 37 and we expect that the pairs of unconnected points are 1 8, 2 9, 3 10, …, 40 10.

I conclude that the three sets of circles and points, produced by the "periodical" partitions of, respectively, 12, 24, and 24, are a sufficient basis for the definition of an affine circle geometry, with the axiom scheme that every circle contains exactly *n* points. Until now we have models for the values

5, 7, and 9 of *n*. The question is only whether the axiom scheme has models for larger values.

As long as we have no general theory, we are dependent on "the computer" and I was delighted when Dr. Donkers informed me that 60 has four different partitions with double sums, to wit:

60 = 21 + 4 + 2 + 1 + 4 + 9 + 1 + 5 + 3 + 8 + 2 with holes 12, 24, 36, and 48

60 = 16 + 1 + 8 + 14 + 5 + 2 + 4 + 4 + 3 + 2 + 1 with holes 12, 24, 36, and 48

60 = 15 + 2 + 11 + 7 + 9 + 5 + 1 + 4 + 3 + 1 + 2 with holes 12, 24, 36, and 48

60 = 11 + 6 + 11 + 4 + 10 + 8 + 1 + 4 + 2 + 1 + 2 with holes 12, 24, 36, and 48

It follows that there is also an affine circle geometry with the property that every circle contains exactly 11 points. Can we proceed in the same way? That is to say, is there an affine circle geometry with the property that every circle contains exactly 13 points? Looking for periodical partitions of 84 in 13 parts is still a task that we may allot to the computer, but it it is clear that a general theory is badly needed.

FINITE CURVE GEOMETRIES?

The defining property of projective circle geometries is that the circles have precisely two points in common. This required that every partial sum of the number of points ocurrred twice. Affine circle geometries obey similar restrictions. It is clear that we can also ask for partitions in which every partial sum occurs three, or four, or even more times. For example, with five points the following partition leads to five geometrical forms which have precisely three points in common with each other:

5 = 2 + 1 + 1 + 1

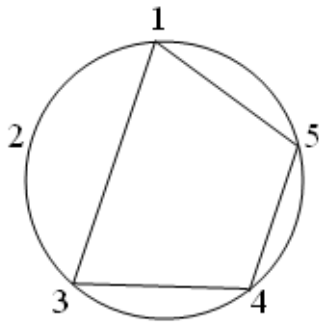

Fig. 21

Figure 21 shows one of these forms in the shape of a quadrangle, but it is obvious that we can also think of curves:

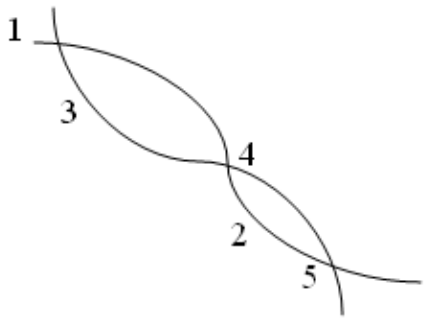

Fig. 22

In Figure 22, two curves are drawn, one through 1, 3, 4, 5 and the other through 2, 4, 5, 1, and one has to imagine that there are also such curves through 3, 5, 1, 2 and 4, 1, 2, 3 and 5, 2, 3, 4.

Searching for complete partitions for such curve geometries is an exercise that can be best entrusted to a computer. Below are some results found by another computer program written by Dr. Donkers.

The following partitions for projective curve geometries are such that every two curves have three points in common:

11 = 4 + 2 + 1 + 2 + 1 + 1
15 = 5 + 2 + 3 + 1 + 2 + 1 + 1

There are also partitions for projective curve geometries such that every two curves have four points in common, for example:

15 = 4 + 3 + 1 + 2 + 2 + 1 + 1 + 1
19 = 5 + 2 + 2 + 1 + 1 + 1 + 3 + 3 + 1

Moreover, interesting partitions for projective curve geometries such that every two curves have five points in common were found with 19 and with 23, and partitions for projective curve geometries such that every two curves have six points in common with 13 and with 23.

An example of an affine curve geometry such that every two circles have at most three points in common is given by the following partition:

16 = 6 + 3 + 1 + 1 + 2 + 2 + 1

Its hole is "at" 8, so there are two sets of circles, and it is easy to see that their first members are 1,

7, 10, 11, 12, 14, 16 and 9, 15, 2, 3, 4, 6, 8, respectively.

It is difficult to tell how significant such structures are. Will it be possible to prove general theorems about them? The answer lies in the future.

Workshop on the Philosophy of Information

March 9-10, 2005, Amsterdam

Mark Theunissen
Universiteit van Amsterdam

Information is regarded a fundamental notion across the sciences and humanities, which is crucial to understanding physical computation, communication and human cognition. How are the several different uses of the notion of information across the different fields related? Can we come up with one overarching notion of information or are we dealing with several different notions that are either somehow equivalent or fundamentally different? These were some of the main themes discussed in the workshop on the Philosophy of Information held last March 9 and 10 in the beautiful 'Old Meeting Room' of the KNAW Trippenhuis. This workshop on a relatively new topic in the philosophy of science was held against the background of the project of the *Handbook on the Philosophy of Information*, a handbook in the series of handbooks on the philosophy of science edited by Professor Johan van Benthem and Professor Pieter Adriaans.

The Handbook on the Philosophy of Information aims at bringing together the most important perspectives on information. It includes major technical approaches, while also setting out the historical backgrounds of information as well as its contemporary role in many academic fields. As there is no established area yet of Philosophy of Information, the Handbook can help shape one. The workshop was a unique opportunity for several experts from the field of computer science, mathematics, logic, artificial intelligence, philosophy, and social sciences to meet each other and present their perspective on the notion of information. Most experts met each other for the first time, often discovering their perspectives have more in common then they had thought, but also laying bare the barriers between their disciplines.

Against the background of the handbook, the larger part of the programme consisted in chapter presentations from each of the authors of the handbook. (See below the list of guest presentations.) Given the differences in background of the various guests not all presentations were mutually understandable, but despite this, it became obvious that the information perspective opened up new insights for all. It became clear above all that the 'information perspective' is not one perspective and that one should not try to find a unifying notion of information across the sciences. In computer science alone there are several, though equivalent, definitions of the notion of information. Next to this, every discipline probably has its one particular use and place for a notion of information. For instance, some stress the 'aboutness' of information: information is always about something. Information can thus be viewed as the carrier of the content about something that has meaning. This is a perspective of information as communication. A computer scientist would probably stress the value of information. Information is not so much about something as it is a value or measure of something. Information is more a characteristic of something we can measure and calculate with, like length or temperature. In this sense, information is a representation of certain characteristics of an object or system. For instance, a way of 'measuring' the information value of a computer in bits.

As it is was soon concluded that there is not one notion of information across the disciplines present, the debate moved in another general direction. How to study the notions of information across the different disciplines? Here there seem to be two options available. We can simply categorize all the notions of information and their uses across the different disciplines, cataloguing their differences, similarities and cross connections. In such a way we can obtain a general overview of the notion of information across the disciplines and their histories. This is the safe way to treat the topic where an interesting result of studying the notion of information is assured.

The other approach is to do basically the same as the first, but to also stress that the notion of information is somehow fundamental for the sciences and humanities as they have developed over the last century. We can consider the notion of information as paradigmatic for viewing the current developments in the sciences and humanities. The motivation for this is that today the information and computer metaphor is used more and more and seems to provide a fruitful model in a wide range of cases. For example, some physicists model the universe as a computer that has made a certain number of calculations. This path, of taking information as fundamental to all

disciplines, is obviously more risky. We can try to see everything as a computer, but we cannot yet predict whether this paradigm will turn out to be fruitful. Sometimes it might, sometimes it might not. The main question here is to conceive of a coherent way of perceiving the information perspective as a method to model the world and to know its limits. For example, once science perceived of the universe as a clock, but later found out the limits of this model.

The field remains largely open and undeveloped, but the first attempts were made to take the notion of information as a notion through which the philosophy of science can look at a whole range of disciplines. One conclusion of the workshop was that a follow up conference around the publication date of the book is in order.

Talks held at the workshop:

P. Adriaans
History of Ideas: Information Concepts

F. Dretske
Epistemology and Information

Groenendijk, H. Kamp and M. Stokhof
Information and Philosophy of Language

L. Floridi
Modern Trends in Philosophy of Information

F. Topsøe and P. Harremoës
Classical Information Theory

K. Kelly
Learning

P. Grünwald and P. Vitanyi
Algorithmic Complexity

A. Baltag
Epistemic Logic and Information Update

H. Rott
Information Structure and Belief Revision

S. Abramsky
Information, Processes and Games

J. M. Dunn
Information in Computer Science

K. Devlin
Information in Social Sciences.

J. McCarthy
Information in Artificial Intelligence

For more information on the Handbook project, the chapters and authors see book number 10 on: http://people.uleth.ca/%7Ewoods/HPS_WP/hps.html

In Memoriam Leo Coolen

In de vroege ochtend van 28 april jl. is in zijn slaap overleden Prof. ir. L.A.A.M. Coolen. Het bericht overviel ons volledig. Leo Coolen was Algemeen Directeur bij NWO en bijzonder hoogleraar Telecommunicatie bij het Instituut voor Kennis en Agent Technologie (IKAT) aan de Universiteit Maastricht. Vanuit de laatste functie was hij ook aan SIKS verbonden en derhalve nauw betrokken bij diverse AI-ontwikkelingen in Nederland en daarbuiten.

Coolen was nauwkeurig en serieus, toonde grote betrokkenheid met het werk en vooral met de mensen. Wij wensen zijn vrouw Ria sterkte met het verwerken van het plotselinge verlies van haar man.

Het bericht bereikte ons bij het ter perse gaan van dit nummer. In het volgende nummer zullen wij aandacht besteden aan de betekenis van Leo Coolen voor Informatica, Kunstmatige Intelligentie en het onderzoek in Nederland. Persoonlijk wil ik hier graag aan toevoegen dat IKAT Leo zeer erkentelijk is voor zijn inzet, veelal onzichtbaar, voor ons instituut. Gelukkig heeft hij nog mee mogen maken dat in de laatste maanden bleek dat wij toch niet gereorganiseerd zouden worden en sterker nog dat het ICT-onderzoek in Maastricht zelfs een goede (grote) impuls krijgt. Leo, wij bedanken je voor je inzet en gedenken je als een bijzondere kameraad en vriend

Jaap van den Herik

First CIG in Essex

April 4-6, 2005
University of Essex

Jaap van den Herik
IKAT, Maastricht

The University of Essex at Colchester, Essex, UK celebrated its 40th anniversary, among others, with the organisation of the 1st CIG conference, in which CIG stands for Computational Intelligence and Games. The organisers started a new track along the lines of the Computer and Games Conference series (CG'98,'00,'02,'04) and the

Advances in Computer Games Conferences (now in its 11th edition). The main theme of the conference was *Co-evolution* in all meanings of the word. The conference had many connections with commercial games too (at least the development of commercial games). So CIG 2005 was in some sense related to the CGAIDE and GAME-ON conferences.

The conference in Essex (Colchester was the place of convening) brought 63 participants together from 12 countries (58 academics and 5 industrials). There were 54 submissions of which 38 were accepted (28 for oral presentations, 10 as poster). So the acceptance rate was 52% (28 out of 54). There were four invited lectures, namely by Jordan Pollack (Brandeis University) *Is Progress Possible?*, by Risto Miikkulainen (University of Texas at Austin) *Creating Intelligent Agents through Neuroevolution*, by Martin Müller (University of Alberta) *Challenges in Computer Go*, and by H. Jaap van den Herik (Universiteit Maastricht) *Opponent Modelling and Commercial Games*. My lecture was inspired by the work of Jeroen Donkers (Opponent Modelling) and Pieter Spronck (Commercial Games). Below I would like to discuss briefly the talks by Pollock and Miikkulainen, and finish with some general remarks.

IS PROGRESS POSSIBLE?

Pollack started with two observations from the 1990s.

(1) AI was stuck in Software Engineering,
(2) ML was stuck in Gradient Engineering.

His research question was: How to start a process aiming at progress? His tentative answer was: A self-writing computer program.

Pollack analyzed the influences on scientific progress from various sides: AI, Games, Biology, Neural Nets, and Ecology. The items discussed in Games were positioned in the spectrum knowledge versus search. In the area of ecology he discussed: (1) group selection, (2) altruism, (3) mutualism, (4) chemistry, and (5) self-organisation. Of course, then the evolutionary element entered his talk. His main statement was that: the population of learners is subject to selection by fitness at a task. Consequently, after some time we arrived at co-evolution. Here his statement was: co-evolution leads to arms race. Three examples of development were given.

(1) Foxes vs. Sheep (predator/pray)
(2) Chicken vs. Egg (life phases)
(3) Body vs. Brain (plan and controller)

The breakthrough was situated in 1992 when the general opinion for robotics arrived at: Never Robotics without a Brain. This statement was followed by a list of successes, ending in an enumeration of Artificial Life Forms. Pollack did a similar exercise in the domain of Games. He started with self-play and developed the general idea of extracting the right features of knowledge from a given game. He mentioned his own Hill Climbing Game program and mentioned the Buster Douglas effect as the main obstacle. Problems with learning were: (1) winner takes all, (2) menacy loss, (3) boom cycles, (4) death spirales, (5) mediocre stability, and (6) overspecialisation.

Pollack worked all these topics out by providing examples and arrived at two/three finishing questions, namely: (1) Is playing games identical to competition? and (2) Should teachers and students compete? The latter question was immediately followed by the question (3) Should teachers help students get higher scores? A report on (thought) experiments was given, resulting in the open statement that this approach might contain: A new principle for progress.

NEURO EVOLUTION

In his invited lecture Risto Miikkulainen addressed five scientific challenges, namely,

(1) Discovering novel behaviour
(2) Discovering team behaviour
(3) Discovering composite behaviour
(4) Utilizing co-evolution
(5) Real-time adaptation

Below I give a brief idea of what he discussed.

Ad (1) Positional play in Othello will lead to the discovery that mobility is an important feature.
Ad (2) Predator/Pray domain (Multi Agent Neuro evolution). Each controller only sees the pray (they are stigmatised).
Ad (3) Listing soccer goals, and combing them in a strategy. This led to cooperative co-evolution.
Ad (4) Competitive co-evolution. Miikkulainen discussed the notions: Mature strategy and Sophisticated strategy.
Ad (5) Here the game *Nero* was discussed in various facets: a complete platform and the idea of: the player is a coach.

The future challenge in all five challenging areas was according to the speaker: Utilizing knowledge.

ORAL PRESENTATIONS

The first presentation of the conference, *Utile Coordination: Learning interdependencies among*

cooperative agents, was given by Jelle Kok (University of Amsterdam). Jelle and myself were the only two Dutch participants. We stated that next conferences deserved a higher attention from Dutch researchers. Jelle showed many views on Utile Coordination, an algorithm that allows a multi-agent system to learn where and how to coordinate. The method starts with uncoordinated learners and maintains statistics on expected returns. The paper was co-authored by Pieter Jan 't Hoen, Bram Bakker and Nikos Vlassis.

Other presentations can be found in the *Proceedings of CIG 2005* (eds. Graham Kendall and Simon Lucas), University of Essex, Colchester, UK. ISBN 0-9655821-3-6.

The CIG 2006 will be held in Reno, USA, and the CIG 2007 in Hawai. All reasons to prepare and submit a paper for these exciting conferences.

The invited speakers and organisers of CIG 2005: from left to right: Martin Müller, Jordan Pollack, Graham Kendall, Simon Lucas, Jaap van den Herik and Risto Miikkulainen.

Farewell Eric Backer

Jaap van den Herik
IKAT, Maastricht

On April 18, the scientific community of Pattern Recognition and related disciplines, such as Artificial Intelligence, assembled in The Lindenhof in Delft to say farewell to their highly esteemed colleague Professor Eric Backer (Delft University of Technology). Professor Backer was for a long time Editor-in-Chief of the *Pattern Recognition Letters* Journal, he contributed to many AI conferences and combined Art and Science within the realm of Pattern Recognition. No wonder that the symposium was titled *The Art and Science of Pattern Recognition*. The speakers were Bob Duin on *Art, pattern recognition and consciousness*, Anil K. Jain on *Clustering: User's dilemma*, Mark van Staalduinen on *An authentic approach of art informatics*, Peter van Kranenburg *Toward a quantitative method for musical style modeling*, and Lou Feijs on *The Language of Mondriaan*. All five lectures were a kind of lively speeches illustrating the merits of Professor Backer. His work turned out to be multifaceted and attractive for comparisons and connections with a range of other scientific fields. Backer was delighted and finished his academic career with remarking: "I am still supervising a couple of Ph.D. students and I am the chairman of SKBS." We wish him much pleasure at the East side of our country, in Diepenheim.

An Irregular Stream

Jaap van den Herik
IKAT, Maastricht

The stream of consciousness is as irregular as the stream of Ph.D. theses. For an appropriate thesis a Ph.D. student needs ideas, skills, and the right attitude. Even when all three are present it will take on average four years before the thesis is completed. Yet, every completion is a feast in itself. The faculty, the family, and the scientific committee enjoy the completion.

In a previous issue I discussed the reading of a thesis superficially, by stating that M.Sc. students usually had difficulties to discover the ideas incorporated in a thesis. Once a thesis has been published there are three things to pay attention to, namely (1) the reading (and the readers), (2) the spreading of the news (e.g., the reviews), and (3) the citations. Some five years ago I suggested that reading a thesis should be an essential part of the SIKS research school. Of course, Ph.D. students read other theses in their specialized domain, but I meant reading and reviewing. SIKS should give credits for reviewing a thesis. To the new Scientific Director of SIKS (to be appointed soon, and to start on January 1, 2006) I would like to suggest to consider (a) to make one review (in four years time) an obligatory part of the SIKS education or (b) to consider the writing of three reviews as equivalent to following a SIKS course of 2.5 days. Of course, the three reviews should be checked by the Scientific Director on their merits. I believe that Ph.D. students can learn quite substantially from reading each others work.

This brings me to the topic of a student's expectation. How many readers may the authors of the seven theses announced below expect? It is a difficult question, since the stream of Ph.D. theses is irregular by nature. This holds true for all dimensions one can imagine, such as quality,

popular topic, interestingness, and writing style. Maybe the number of readers is a dimension in itself. Let me try to answer the question for an average Ph.D. thesis of good quality (say 7.5 to 8 in the Dutch terminology of assigning marks to an M.Sc. thesis). The number of promotors, co-promotors and referees vary from 1 to 4; assessment committee from 3 to 6; the promotion committee is ceremonial (let us assume that one or two members fully read the thesis). Moreover, a clever student has a group of co-readers, say 5 to 8, for all kind of peculiarities (style, English, details, specific points of the contents, etc). Then we have friends, colleagues, and interested outsiders. In summary, I believe that the number of readers amounts some 40 to 50 per thesis. So, for the seven below, the number of readers is estimated to be 200. Therefore, we should emphasize on "spreading the good news". This brings me to the number of reviews in this issue. It is none, and I would like to change this behaviour by publicly requesting the SIKS Director to put the topic on the agenda of the next meeting and by encouraging my colleague supervisors to go around and find some reviewers for your students' theses. The work that the students did deserves such a treatment and for the supervisors it is rewarding too.

Gabriel Infante-Lopez (April 6, 2005). *Two-Level Probabilistic Grammars for Natural Language Parsing*. Universiteit van Amsterdam. Promotores: Prof. dr. M. de Rijke and Prof. dr. R. Scha.

Semir Daskapan (April 27, 2005). *MEDUSA. Survivable Information Security in Critical Infrastructures*. Technische Universiteit Delft. Promotores: Prof. dr. H.G. Sol and Prof. dr. W.G. Vree.

Frank Mulder (May 12, 2005). *Tactical Plan Recognition*. Universiteit Maastricht. Promotor: Prof. dr. ir. K.L. Boon, Assistant Promotor: Dr. P.J. Braspenning.

Pieter Spronck (May 20, 2005). *Adaptive Game AI*. Universiteit Maastricht. Promotores: Prof. dr. H.J. van den Herik and Prof. dr. E.O. Postma.

Flavius Frasincar (June 20, 2005). *Hypermedia Presentation Generation for Semantic Web Information Systems*. Technische Universiteit Eindhoven. Promotores: Prof. dr. P. De Bra, Prof. dr.ir. G-J. Houben, Assistant Promotor: Prof. dr. J. Paredaens.

Richard Vdovjak (June 20, 2005). *A Model-driven Approach for Building Distributed Ontology-based Web Applications*. Technische Universiteit Eindhoven. Promotores: Prof. dr. P. De Bra, Prof. dr.ir. G-J. Houben, Assistant Promotor: Prof. dr. J. Paredaens.

Jeen Broekstra (July 4, 2005). *Storage, Querying and Inferencing for Semantic Web Languages*. Vrije Universiteit Amsterdam. Promotor: Prof.dr. F. van Harmelen.

SECTION KNOWLEDGE SYSTEMS IN LAW AND COMPUTER SCIENCE

Section Editor
Marie-Francine Moens

IT in the Administration of Justice: an Impression

JURIX lecture by Prof. dr. Anja Oskamp
Vrije Universiteit Amsterdam

February 15, 2005
Vrije Universiteit Amsterdam

Report by Martin Apistola
Vrije Universiteit Amsterdam

"IT in the administration of Justice" is a rather broad subject. Prof. Anja Oskamp limited her talk to a general overview of the topic and gave a personal impression. The main subjects of her lecture were: The history of the use of IT in the administration of justice, systems for the management of criminal law, projects by the Public Prosecutions Department, the situation in and outside Europe, and the current ACCESS project.

It all started in the seventies, when the automated analysis of legal cases was studied in the United States and later also in the Netherlands. During the seventies and the eighties, the Public Prosecutions Department started with the introduction of IT. Their expectations were rather ambitious according to Anja Oskamp. In 1986 an article in the journal *Computerrecht* addressed the issue of what went wrong with IT in the Public Prosecutions Department. According to Anja Oskamp the content of this article is still very relevant.

SENTENCING PER COMPUTER

Anja Oskamp referred mainly to the criminal law system Senpro. Senpro (Sentencing Per Computer)

was the first (1975) system for criminal law management. Prof De Mulder and Prof. Oskamp participated in the development of this system which uses a decision tree classification model for sentence determination. One of the main research questions was whether a model for sentencing could be implemented in a computer system. This succeeded. During the nineties several criminal law management systems were developed in Scotland, Australia and the Netherlands (e.g., Eduard Oskamp). These systems mainly had an assisting function: They provided information and statistical information to support sentencing.

One of the projects by the Public Prosecutions Department at the end of the eighties was COMPAS (in Dutch: "Communicatiesysteem Openbaar Ministerie – Parket AdministratieSysteem"), which should deliver support to the administration of justice. But the development and implementation of the system was delayed by the political decision process. When it was finally implemented, the technology was already out-of-date. In addition, the system was evaluated by its users as not being user-friendly; for instance, searching for information is very slow. Another, (Fl. 28.000.000!), project that Anja Oskamp mentioned was HBS (in Dutch: "Hoger Beroepssysteem Strafzaken"), a system developed at the end of the nineties to support the high court of justice with appeal cases. This system integrates a large number of functionalities, which confuses many of its users.

Anja Oskamp referred to an ITeR project in 2001 which researched the current situation of IT in the administration of justice in six European countries: Norway, the United Kingdom, the Netherlands, Belgium, France and Italy. In 2001, IT in the administration of justice in the United Kingdom, Belgium and France was not very much integrated. In Norway, the Netherlands and Italy the situation was much better. The situation in the United Kingdom and France improved but was still limited. Norway and Italy scored better. One of the reasons that Norway was ahead is that during the seventies the Norwegian minister of Justice was married to the founder of the Computer and Law Center in Norway. But later on the developments in Norway slowed down. During the seventies and eighties in Italy many databases were developed and many projects were launched, but were unsuccessful. A study of 2004 also looked at IT and justice in Norway, the Netherlands and Italy, and outside Europe in Australia, Singapore and Venezuela. In 2004 there was a lot of improvement in countries outside Europe. In Belgium, the situation is currently changing in a good direction with the development and deployment of the PHENIX project.

Why does it sometimes go wrong with IT in the law practice? One explanation is that legal professionals, such as magistrates, are usually not trained and experienced in using IT systems. They are often reluctant to use innovative technologies, because the use of IT entails changes in organisation, management and procedures.

Some non-European countries are in a more favourable situation to promote IT in the administration of justice. Australia, for instance, is a huge country with relatively few people. Problems with distance are supported with IT such as video conferencing. Furthermore Australia experimented with Sentencing Systems and Case Management Systems. Singapore made a direct transition from the Stone-age into the IT-age. IT was needed to improve the organisation of the judiciary system. This need was translated into the use of systems for criminal law and case management, and the use of electronic files in courtrooms. Venezuela was largely supported by the Worldbank and focussed on service to customers by means of, for example, SMS and Internet that was used in the communication between the judiciary system and the citizens.

ELECTRONIC FILING

In the Netherlands we see the development and implementation of new systems such as the electronic filing of legal cases in the court of Amsterdam. Judge, public prosecutors and court clerks are able to consult the electronic file of a case via computer screens that are set up in the courtrooms. Judge and public prosecutor can virtually mark important parts within the electronic file which can automatically be summarized. An advantage is that files of different media format (text, audio, video, etc.) are part of the electronic case file. Another project that Anja Oskamp mentioned is the digital report (in Dutch: "Digitaal Proces Verbaal"). Reports by the police are directly entered into the system. Interesting to cite is the interrogation of suspects with the help of video conferencing. An advantage of such an approach is that the suspect does not have to change location and the lawyer can see the face of the suspect in contrast with the situation where the suspect is interrogated in court. To make this possible a change of legislation is required. Human Rights laws need to be taken into account. IT raises legal questions such as: Should body-language and, for example, the hands of a suspect be visible and is it possible to read from a computer screen?

Finally, Anja Oskamp introduced the ACCESS (Agent-based Criminal Court Electronic Support Systems) project (2005-). It aims at researching agents for the management of the electronic file of

a court case. The goal of the ACCESS project is to simulate manual tasks by computer programs. The background of ACCESS lies in the ALIAS project (2001-2003), (http://www.nlnet.nl/project/alias/index.html), lead by professor Frances Brazier (Intelligent Interactive Distributed Systems Group, Vrije Universiteit Amsterdam) and professor Anja Oskamp (Computer Law Institute, Vrije Universiteit Amsterdam). ALIAS is an exploratory multi- and interdisciplinary research on legal implications and potential of the use of agents. There is a definite need for more automated support in the management of the electronic file. One simple aspect is the management of the different information sources.

Furthermore, versions of statutes, for example, change rather quickly. Agents can be used to manage and identify the latest version of relevant legislation. In addition, agents can communicate and gather the necessary information for the electronic file. Security aspects play an important role in the ACCESS project, as certain information is only accessible for certain types of users.

CONCLUSION

Anja Oskamp showed that IT and justice is an ongoing process and many countries are still looking into its possibilities. Developing and implementing IT to support justice is not as easy as it may seem. Changes come bit by bit: Slowly but surely.

ANNOUNCEMENTS

Data Mining Course

An intensive 5-day introduction to methods and applications

June 27 - July 1, 2005

IKAT, Universiteit Maastricht

INTRODUCTION

Data mining is a relatively new scientific field that enables finding interesting knowledge (patterns, models and relationships) in very large databases. It is the most essential part of the knowledge-discovery process and has the potential to predict events or to analyse them in retrospect. Data mining has elements of databases, statistics, artificial intelligence, and machine learning.

WHY DATA MINING

A typical database contains data, information or even knowledge if the appropriate queries are submitted and answered. The situation changes if you have to analyse large databases with many variables. Elementary database queries and standard statistical analysis are not sufficient to answer your information need. Your intuition guides you to understand that the database contains more knowledge on a specific topic that you would like to know explicitly. Data mining can assist you in discovering this knowledge. The course shows you within five days how this works. You will learn new techniques, new methods, and tools of data mining. Hands-on education is involved.

COURSE DESCRIPTION

The course focuses on techniques with a direct practical use. A step-by-step introduction to powerful (freeware) data-mining tools will enable you to achieve specific skills, autonomy and hands-on experience. A number of real data sets will be analysed and discussed. In the end of the course you will have your own ability to apply data-mining techniques for research purposes and business purposes.

COURSE CONTENT

- The Knowledge Discovery Process
- Preparing Data for Mining
- Basic Techniques for Data Mining:
  - Decision-Tree Induction
    - Rule Induction
    - Instance-Based Learning
    - Neural Networks
    - Bayesian Learning
    - Support Vector Machines
    - Ensemble Techniques
    - Clustering
    - Association Rules
- Tools for Data Mining
- How to Interpret and Evaluate Data-Mining Results

INTENDED AUDIENCE

This course is intended for four groups of data-mining beginners: students, scientists, engineers and experts in specific fields who need to apply data-mining techniques to their scientific research, business management, or other related applications.

PREREQUISITES

The course does not require any background in databases, statistics, artificial intelligence, or machine learning. A general background in science is sufficient as is a high degree of enthusiasm for new scientific approaches.

COSTS

Academic fee: € 500,-
Non-academic fee: € 750,-

Participating in this course is a part of the advanced components stage of SIKS' educational program. SIKS has reserved a number of places for those Ph.D-students working on the course topics.

For more information you can consult the website: http://www.cs.unimaas.nl/datamining/2005 or send an email to: M.Tiessen@cs.unimaas.nl

Social gathering at CIG 2005.

Call for Papers

4th Mexican International Conference on Artificial Intelligence (MICAI 2005)

November 14-18, 2005
Monterrey, Mexico

GENERAL INFORMATION

MICAI is a high-level international conference covering all areas of Artificial Intelligence, traditionally held in Mexico. All previous editions of MICAI were published in Springer LNAI (N 1793, 2313, 2972). Acceptance rate of MICAI-2004 was 38% of submissions from 19 countries.

The conference is organized by the Mexican Society for Artificial Intelligence (SMIA) in cooperation with the Mexican Society for Computer Science (SMCC) and the American Association for Artificial Intelligence (AAAI).

The scientific program includes invited lectures, paper presentations, tutorials, panels, and workshops.

PAPER SUBMISSION

All accepted papers will be published by Springer-Verlag in their Lecture Notes in Artificial Intelligence (LNAI).

Authors are invited to submit original previously unpublished research papers written in English, of up to 10 pages, strictly following the LNCS/LNAI format guidelines (see website). Submissions not following the format guidelines are rejected without review.

Submissions are received electronically through the website, see www.MICAI.org/2005. The title and a short abstract must be submitted a week before the paper submission deadline (see website).

All submissions will be subject to blind peer review by three program committee members.

IMPORTANT DATES

May 22: Paper registration deadline (title and abstract required).
May 29: Paper submission deadline (only papers registered by May 22).
July 17: Acceptance notification.
August 7: Camera-ready deadline.

TOPICS

Topics of interest are all areas of Artificial Intelligence, including but not limited to: Expert Systems / KBS; Multiagent Systems and Distributed AI; Knowledge Management; Intelligent Interfaces: Multimedia, Virtual Reality; Natural Language Processing / Understanding; Computer Vision; Neural Networks; Genetic Algorithms; Fuzzy Logic; Belief Revision; Machine Learning; Intelligent Tutoring Systems; Data Mining; Knowledge Acquisition; Knowledge Representation; Knowledge Verification, Sharing and Reuse; Ontologies; Qualitative Reasoning; Model-Based Reasoning; Constraint Programming; Common Sense Reasoning; Case-Based Reasoning; Nonmonotonic Reasoning; Spatial and Temporal Reasoning; Robotics; Planning and Scheduling; Navigation; Assembly; Hybrid Intelligent Systems; Logic Programming; Automated Theorem Proving; Intelligent Organizations; Uncertainty / Probabilistic Reasoning; Philosophical and Methodological Issues of AI.

ORGANIZATION

Conference Chairs: Alvaro de Albornoz, Angel Kuri.
Program Chairs: Alexander Gelbukh, Raul Monroy.
Tutorial Chairs: Manuel Valenzuela, Horacio Martinez.
Workshop Chairs: Ramon Brena, Jose Luis Aguirre.
Keynote Talks Coordinator: Carlos Alberto Reyes.
Local Chair: Hugo Terashima.

Local Steering Committee: Rogelio Soto, Ricardo Swain.

CONTACT

General inquiries: micai2005 at MICAI dot org.
Inquiries on submission requirements: submission at MICAI.org.
Inquiries on the conference program: program at MICAI.org. See more contact options on www.MICAI.org/2005.

Call for Papers

The 2005 European Simulation and Modelling Conference (ESM 2005)

October 24-26, 2005
Porto, Portugal

AIM OF ESM 2005

The ESM 2005 (European Simulation and Modelling Conference) is the new international conference concerned with state of the art technology in modelling and simulation. ESM 2005 aims to provide an overview of academic research in the field of computer simulation. A number of major tracks of simulation research are presented next to specific workshops, which capture the art and science of present-day simulation research. All submissions will be peer reviewed by three members of the International Program Committee. Accepted papers will be published in the Conference Proceedings (both print and electronic format on the web), that will be copyrighted and widely disseminated. All talks and tutorials, must be accompanied by a paper of between three to eight Proceedings pages.

Contributions to the technical program are solicited in the following general areas; Methodology and Tools; Simulation and AI; High Performance and Large Scale Computing; Simulation in Education and Graphics Visualization Simulation; Simulation in Environment, Ecology, Biology and Medicine, Analytical and Numerical Modelling Techniques; Web-based Simulation; Agent-based Simulation

TUTORIALS

Tutorials can be proposed in the following three categories: T1- Introductory tutorials; T2- State of the Art Tutorials; T3- Software and Modelware Tutorials. Tutorial proposals should be emailed to Philippe.Geril@biomath.ugent.be

PAPER SUBMISSION TYPES

Full Paper
(including abstract, conclusions, diagrams, references) During review, the submitted full papers can be accepted as a regular 5-pages paper. If excellent, full papers can be accepted by the program committee as an extended (8-page) paper. Each submission will be reviewed by at least three members of the International Program Committee.

Extended Abstract
Participants may also submit an extended abstract for a regular (5-pages) or short (3-pages) paper or poster, which will be reviewed by the International Program Committee. All accepted papers will be published in the ESM 2005 Conference Proceedings.

Short Abstract
Participants may also submit a 3-pages abstract for a short paper or poster, which will be reviewed by the International Program Committee. All accepted papers will be published in the ESM 2005 Conference Proceedings.

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Selected papers are published in the following journal: *International Journal of Computational Science and Engineering* (IJCSE) to be published by InderScience: http://www.inderscience.com/catalogue/c/ijcse/indexijcse.html

IMPORTANT DEADLINES

July 15, 2005:

- Submission of full-papers (5 to 8 proceedings pages) not previously published. These submissions, when accepted will be published as regular or extended papers, depending on their quality.
- Submission of extended abstracts (5 abstract pages) or short papers (3 abstract pages), reports of scientific projects and summaries of posters. These submissions, when accepted will be published as regular, of up to 5-pages proceedings papers.
- Submission of 3-pages proposals to present tutorials, to organise and chair panel sessions,

to organise user meetings, vendor sessions or to exhibit software.

August 25, 2005: Notification of Acceptance

September 30, 2005: camera-ready manuscript

ORGANIZATION

EUROSIS, The European Simulation Society

For detailed information see: www.eurosis.org or http://biomath.rug.ac.be/~eurosis/conf/esm/esm2005/ (this website will be moved to a dedicated EUROSIS webserver soon).

Call for Papers

2006 IEEE World Congress on Computational Intelligence

July 16-21, 2006
Sheraton Vancouver Wall Centre,
Vancouver, Canada

A Joint Conference of the International Joint Conference on Neural Networks (IJCNN), IEEE International Conference on Fuzzy Systems (FUZZ-IEEE) and IEEE Congress on Evolutionary Computation (CEC)

The annual International Joint Conference on Neural Networks (IJCNN 2006) is a premier event in the areas of neural networks. It covers all topics in neural networks, including, but not limited to: supervised, unsupervised and reinforcement learning; neuroinformatics; computational neuroscience; neural dynamics & complex systems; connectionist cognitive science; neural optimization & dynamic programming; kernel methods; graphic models; embedded neural systems; autonomous mental development; neural control & cognitive robotics; hybrid intelligent systems; data analysis & pattern recognition; image & signal processing; hardware implementation; real-world applications.

IJCNN 2006 will be held jointly with the IEEE Conference on Fuzzy Systems and the IEEE Congress on Evolutionary Computation. Cross-fertilization of the three technical disciplines and newly emerging technologies is strongly encouraged. The Congress will feature world-renowned plenary speakers, state-of-the-art special sessions, themed tutorial workshops, moderated panel discussions, regular technical sessions, poster interactions, and entertaining social functions. All papers are to be submitted electronically through the Congress website. Look for more details at http://www.wcci2006.org.

For general inquiries, contact General Chair Gary Yen at gyen@okstate.edu. For program inquiries, contact Program Chair Lipo Wang at elpwang@ntu.edu.sg.

CALL FOR SPECIAL SESSIONS

IJCNN 2006 Program Committee also solicits proposals for special sessions within the technical scope of the conference. Special sessions are organized by internationally recognized experts and aim to bring together researchers in a focused topic. Special sessions have become both a tradition and an important component of IJCNN. Papers submitted for special sessions are to be peer-reviewed with the same criteria used for the contributed papers. Researchers interested in organizing a special session are invited to submit a formal proposal to Special Sessions Chair Jun Wang at jwang@acae.cuhk.edu.hk. Special session proposal should include the session title, a brief description of the scope and motivation, names, contact information and brief CV of the organizers.

CALL FOR TUTORIALS

WCCI 2006 will feature a number of pre-congress tutorials covering fundamental and advanced computational intelligence topics. Tutorial proposals, submitted to Tutorials Chair via emails, are solicited and should include title, outline, expected enrollment, and presenter biography. Any inquires regarding the tutorials should address to Tutorial Chair DeLiang Wang at dwang@cse.ohio-state.edu.

General Chair, WCCI 2006:
Gary G. Yen, Oklahoma State University, USA.
Program Chair, IJCNN 2006:
Lipo Wang, Nanyang Technological University, Singapore.
Special Sessions Chair, IJCNN 2006:
Jun Wang, The Chinese University of Hong Kong, China.
Tutorials Chair, WCCI 2006:
DeLiang Wang, The Ohia StateUniversity USA.

IMPORTANT DUE DATES

Special Session Proposal:	December 31, 2005
Paper Submission:	January 31, 2006
Tutorial Proposal:	January 31, 2006
Decision Notification:	March 15, 2006
Camera-Ready Submission:	April 15, 2006

Call for Papers

EURASIP Journal on Wireless Communications and Networking

Special Issue on Radio Resource Management in 3G+ Systems.

The 3G+ wireless systems can be characterized by aggregate bit rates in the range of Mbps, QoS support for interactive multimedia services, global mobility, service portability, enhanced ubiquity, and larger user capacity. All digital entirely packet-switched radio networks involving hybrid networking and access technologies are envisioned in 3G+ systems. In such systems, radio resource management (RRM) plays a major role in the provision of QoS and efficient utilization of scarce radio resources. With the required support for multimedia services to multiple users over diverse wireless networks and ever-increasing demand for high-quality wireless services, the need for effective and efficient RRM techniques becomes more important than ever. The addition of efficient packet data channels in both forward and reverse directions and QoS support in 3G standards leads to a more flexible network, but at the same time increases the complexity of determining the optimal allocation of resources especially on the radio interface. This special issue is devoted to addressing the urgent and important need for efficient and effective RRM techniques in the evolving next-generation wireless systems.

We are seeking original, high-quality, and unpublished papers representing the state-of-the-art research in radio resource management aspects of the next-generation wireless communication systems. Topics of interests include, but are not limited to:

Resource optimization for multimedia services; Rate allocation and adaptation; Transmit power control and allocation; Intelligent scheduling; Subcarrier allocation in multicarrier systems; Antenna selection techniques in MIMO systems; Call admission control; Load balancing, congestion, and flow control in radio networks; Modeling and analysis of QoS in wireless networks; Adaptive QoS control for wireless multimedia; Delay and jitter management in wireless networks; Handoff and mobility management; RRM techniques in hybrid radio networks; Distributed versus centralized RRM; RRM in mesh networks; Cross-layer optimization of radio resources; H-ARQ techniques and issues; Performance of multihop and cooperative networks; Challenges in implementation of VoIP over radio networks; Experimental and implementation issues. Authors should follow the EURASIP JWCN manuscript format described at the journal site http://www.hindawi.info/wcn/

Prospective authors should submit an electronic copy of their complete manuscript through the EURASIP JWCN's manuscript tracking system at journal's web site, according to the following timetable.

Manuscript Due: October 1, 2005
Acceptance Notification: February 1, 2006
Final Manuscript Due: May 1, 2006
Publication Date: 3rd Quarter, 2006

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Professor Pieter Adriaans (l) and John McCarthy (r), during the Public Symposium on the Philosy of Information.

CONFERENCES, SYMPOSIA, WORKSHOPS

Below, the reader finds a list of conferences and websites or addresses for further information.

MAY 4-6, 2005
ACM International Conference on Computing Frontiers (CF'05). Ischia, Italy.
http://cf05.ac.upc.es

MAY 10-14, 2005
The Fourteenth International World Wide Web Conference (WWW2005). Chiba, Japan.
http://www2005.org/

MAY 22-25, 2005
International Conference on Computational Science (ICCS 2005). Atlanta, USA.
http://www.iccs-meeting.org/

MAY 24-28, 2005
International Conference on Enterprise Information Systems (ICEIS-2005). Miami, USA.
http://www.iceis.org

JUNE 6, 2005
Legal Ontologies and Artificial Intelligence Techniques (LOAIT) Workshop. Bologna, Italy.
http://www.ittig.cnr.it/loait/loait.html#top
Held in conjunction with ICAIL-05
http://www.wogli.unibo.it/icail05/

JUNE 6-8, 2005
Worskhop Business Processes: Models, Examples and Purposes, Eindhoven University of Technology Eindhoven.

JUNE 6-10, 2005
Tenth International Conference on Artificial Intelligence and Law (ICAIL 2005). Bologna, Italy.
http://www.iaail.org

JUNE 10, 2005
Fourth Workshop on Law and Electronic Agents (LEA 2005) as part of ICAIL 2005. Bologna, Italy.
http://www.lea-online.net/

JUNE 13-17, 2005
The 17th Conference on Advanced Information Systems Engineering (CaiSE'05). Porto, Portugal.
http://www.fe.up.pt/caise2005/

JUNE 29, 2005
Workshop at the Annual Meeting of the Association of Computational Linguistics (ACL 2005). Ann Arbor, Michigan.
http://research.microsoft.com/~ringger/FeatureEngineeringWorkshop/

JULY 16-21, 2006
2006 IEEE World Congress on Computational Intelligence, Sheraton Vancouver Wall Centre, Vancouver, Canada.
http://www.wcci2006.org

JULY 25 OR 26, 2005
International Workshop on Organizations in Multi-Agent Systems.To be held at the Fourth International Joint Conference on Autonomous Agents & Multi-Agent Systems (AAMAS 2005). Utrecht, The Netherlands.
http://ooop.emse.fr

SEPTEMBER 19-22, 2005
The 2005 IEEE/WIC/ACM International Joint Conference on Web Intelligence (WI'05) and Intelligent Agent Technology (IAT'05), Compiègne University of Technology, Compiègne, France. http://www.comp.hkbu.edu.hk/WI05/
http://www.hds.utc.fr/WI05
http://www.comp.hkbu.edu.hk/IAT05/
http://www.hds.utc.fr/IAT05

SEPTEMBER 19-23, 2005
Ninth International IEEE EDOC Conference (EDOC 2005). Enschede, The Netherlands.
http://www.edocconference.org

OCTOBER 17-18, 2005
Seventeenth Belgian-Dutch Conference on Artificial Intelligence. Brussels, Belgium.
http://como.vub.ac.be/bnaic2005

NOVEMBER 10-11, 2005
EADTU Working Conference 2005, Rome, Italy.
http://www.eadtu.nl/conference-2005/files/first_announcement_conf2005.pdf
http://www.eadtu.nl/conference-2005/files/first_announcement_conf2005.pdf

NOVEMBER 10-12, 2005
International Symposium on Health Informatics and Bioinformatics (HIBIT'05). Belek, Antalya, Turkey.
http://hibit05.ii.metu.edu.tr

NOVEMBER 14-18, 2005
4th Mexican International Conference on Artificial Intelligence (MICAI 2005). Monterrey, Mexico.
http://www.MICAI.org/2005

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COPY

The editorial board welcomes product announcements, book reviews, product reviews, overviews of AI education, AI research in business, and interviews. Contributions stating controversial opinions or otherwise stimulating discussions are highly encouraged. Please send your submission by E-mail (MS Word or text) to newsletter@cs.unimaas.nl.

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