International Conference on Automated Planning and Scheduling

"Premier forum for researchers and practitioners in AI Planning and Scheduling"

• Merger in 2002:
  – Artificial Intelligence Planning and Scheduling (AIPS)
  – European Conference on Planning (ECP)

• Begun in 1990
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<th>Domain Modeling</th>
<th>Generation</th>
<th>Usability</th>
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<td>Execution</td>
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Making a Difference
Conference Objectives

- Assemble an exciting technical program
  - 7 workshops, 4 tutorials
  - 33 papers in the main conference
  - Poster and Demonstration Sessions

- Attract and support young researchers
  - Successful Doctoral Consortium
  - Financial support for 40 students
  - Invited Talk:
    - Marcia McNutt, CEO of MBARI: "How to Succeed in Science"

- Reach out to other communities, inject fresh ideas
  - Festivus
  - Knowledge Engineering Competition
Numbers

- 93 submissions from 19 countries:
  - Australia (2), Austria (1), Brazil (1), Canada (1), China (6), France (6), Germany (6), India (2), Iran (1), Israel (2), Italy (7), Singapore (1), Spain (3), Sweden (1), Taiwan (1), The Netherlands (1), UK (7), USA (44), Venezuela (1)

- 35% acceptance rate

- 225 conference participants
Scientific Trends

Increase in the number of scheduling papers:
- 23 submitted (25%); 7 accepted (21%)

Search continues to play a prominent role:
- Several papers + Best conference paper

Areas of emphasis:
- Temporal reasoning and planning
- Beyond satisfiability:
  - optimization, preferences, overconstrained problems
- Machine learning of domain models
Invited Talks

Kim Larsen
Optimal and Real-Time Scheduling using Model Checking Technology

Henry Kautz
Understanding Human Behavior from Sensor Data

Drew McDermott
Expressivity
Beam-stack Search: Integrating Backtracking with Beam Search
Zhou and Hansen

- Complete and optimal beam search
- Memory-bounded beam search
- Anytime search algorithm

- State-of-the-art optimal STRIPS planner
  - Excellent results on test suite from the Intl Planning Competition
Learning Action Models from Plan Examples
Yang, Wu and Jiang

- **Input**: set of observed plans
  - init₁, a₁₁, a₁₂, a₁₃, ..., a₁ₙ, goal₁

- **Output**: action models
  - load (x - hoist y - crate z - truck p - place)
    - **pre**: (at x p), (at z p), (lifting x y)
    - **del**: (lifting x y)
    - **add**: (at y p), (in y z), (avail x), (clear y)

**Key contribution:**
- Can learn action models from plan traces only --- no intermediate state observations required

**Approach:**
- Find sets of actions and predicates that share parameters
- Formulate a learning problem as a SAT problem
- Run through a weighted MAXSAT solver
Applications

On-line Planning and Scheduling for High-speed Manufacturing
*Ruml, Do, Fromherz*

Activity Planning for the Mars Exploration Rovers
*Bresina, Jonsson, Morris, Rajan*
Competition on Knowledge Engineering for P&S

Organizers
Roman Barták, Charles Univ., Czech Republic
Lee McCluskey, Univ. of Huddersfield, UK

Aim: promote domain modeling aspects of P&S

Entries: any tool related to Knowledge Engineering for planning and scheduling

Evaluation by a panel of judges:
- Written technical description
- Demonstration
- Short Presentation

Evaluation Criteria
- support potential
- scope
- usability
- interoperability
- innovation
- build quality
- relevance
Competitors/Results

- Environments for **Knowledge Acquisition, Formulation and Modelling**
  - ModPlan (Germany)
  - GIPO (UK) WINNER
  - ItSIMPLE (Brazil)

- Systems for **Machine Learning, Knowledge Refinement and Maintenance, Visualisation, Analysis and Debugging**
  - Hamlet (Spain)
  - ARMS (Hong Kong)
  - Tailor (USA) WINNER
  - PlanWorks (USA)
Happy Festivus!
The only event at ICAPS that is about nothing.

Thursday evening
6/9: 5-6:15pm

A tinsel-less celebration with grievances

...don't miss it!
The Airing of Grievances

- Applications get no respect!
- We spend too much time working on meaningless theories!
- We’re too hard on ourselves!
California Culture
Monterey Bay Aquarium
Visit to MBARI
ICAPS-05 Organization Committee

- Workshop Chairs
  Daniel Borrajo
  Ari Jonsson

- Tutorial Chairs
  Felix Ingrand
  Fahiem Bacchus

- Doctoral Consortium Chairs
  Adele Howe
  Ruth Aylett

- KE Competition Chairs
  Lee Mc Cluskey
  Roman Bártak

- Software Demonstration Chair
  Ioannis Refanidis

- Poster Chair
  Jim Blythe

- Sponsorship Chair
  Maria Fox

- Publication Chair
  Luis Castillo

- Local Organization
  Peter Jarvis
  Elif Kürklü
  Conor McGann
  Bernd Schattenberg
  AAAI Conference Office

Biundo, Myers, Rajan

ICAPS-05 Conference Report
Sponsors

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- SRI International
- European Network of Excellence on Computational Logic
- University of Ulm
- US National Science Foundation
Conclusions

http://icaps05.icaps-conference.org/