Daniel Harabor

dharabor at gmail dot com
`http://users.rsise.anu.edu.au/~dharabor`

1 Education

Degree: PhD (Computer Science)
Thesis Title: Fast and Optimal Pathfinding
Graduated: The Australian National University (2014)

Degree: Bachelor of Science (Computer Science) (Honours, First Class)
Graduated: The Australian National University (2007)

2 Awards and Scholarships

2014 Joint Winner at the annual Grid-based Path Planning Competition (GPPC-2014)

2013 People's Choice Award: 3-Minute Thesis (ANU College of Engineering and Computer Science)

2012 Best Poster (ANU College of Engineering and Computer Science)

2012 Highly Commended (NASSCOM Student Innovation Awards)

2011 Vice Chancellor Travel Scholarship (Australian National University).

2011 Conference Travel Scholarship (IJCAI, AAAI).

2009 Australian Postgraduate Award and NICTA Supplementary PhD Scholarship.

2007 Golden Key International Honour Society (Invited; Australian National University).

2006 Technical Services Division Commendation (Australian Bureau of Statistics).

2003 Jim Wauchope Individual Excellence Award (Swinburne University).

3 Work Experience

Period: February 2013 to Current
Employer: National ICT Australia (NICTA)
Position: Researcher (Optimisation Group)
Project: Port Logistics. This project involves the application of analytic and simulation-based approaches to improving rail capacity at Sydney's Port Botany. As part of this project I have worked to develop a model for peak rail capacity at the port. I have also investigated the impact on capacity from (i) operational changes to rail terminals and (ii) alternative rail scheduling strategies.
Project: Pilot Rostering. This project involves the application of data analytics methods to pilot rostering data from one of Australia's major domestic air carriers. As part of this project I have worked to (i) develop new metrics to better understand pilot productivity; (ii) compute bounds on the minimum size of the pilot crew; (iii) identify root causes for observed (and unobserved) inefficiencies in pilot rosters.
Tools: R, Desmo-J.

Period: April 2010 to December 2010
Employer: National ICT Australia (NICTA)
Position: Research Engineer
Key Duties: Programming support for NICTA projects dealing with traffic simulation and vehicle routing.
Tools: C++, Java, Eclipse, Commuter and Local Search algorithms.

Period: April 2008 to April 2010
Employer: National ICT Australia (NICTA)
Position: Research Engineer
Key Duties: Developing a user-environment for G12; a high-level constraint programming platform.
Tools: Java, Eclipse and a variety of Graph Visualisation algorithms.

Period: May 2007 to March 2008
Employer: Australian Bureau of Statistics
Position: Business Analyst, National Accounts Process Improvement Team
Key Duties: Analysing systems and working practices to identify opportunities for process improvement.
Tools: Process modeling tools and techniques (Workshop facilitation, flowchart development, IGOE diagrams etc.)

4 Research Publications

Below is a selected list of academic papers that I have published in recent years. It is not exhaustive. A full list of publications can be found on my personal website or obtained from my profile pages on DBLP or Google Scholar.

A. Botea, B. Strasser and D. Harabor, *Complexity Results for Compressing Optimal Paths*, National Conference on Artificial Intelligence (**AAAI**), 2015.

N.R. Sturtevant, J.M. Traish, J.R. Tulip, T. Uras, S. Koenig, B. Strasser, A. Botea, D. Harabor and S. Rabin, *The Grid-Based Path Planning Competition: 2014 Entries and Results*, Symposium on Combinatorial Search (**SoCS**), 2015. (**Winning Entry**).

J. A. Baier, A. Botea, D. Harabor and C. Hernàndez, *A Fast Algorithm for Catching a Prey Quickly in Known and Partially Known Game Maps*, IEEE Transactions on Computational Intelligence and AI in Games (**TCIAIG**), 2014.

D. Harabor and A. Grastien, *Improving Jump Point Search*, International Conference on Automated Planning and Scheduling (**ICAPS**), 2014.

B. Strasser, D. Harabor and A. Botea, *Fast First-Move Queries through Run Length Encoding*, Symposium on Combinatorial Search (**SoCS**), 2014.

D. Harabor and A. Grastien, *An Optimal Any-Angle Pathfinding Algorithm*, International Conference on Automated Planning and Scheduling (**ICAPS**), 2013.

A. Botea and D. Harabor, *Path Planning with Compressed Shortest Path Data*, International Conference on Automated Planning and Scheduling (**ICAPS**), 2013.

A. Botea, J. A. Baier, D. Harabor, C. Hernàndez, *Moving Target Search with Compressed Path Database*, International Conference on Automated Planning and Scheduling (**ICAPS**), 2013.

L. Antsfeld, D. Harabor, P. Kilby and T. Walsh, *TRANSIT Routing on Video Game Maps*, AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (**AIIDE**), 2012.

D. Harabor and A. Grastien, *Online Graph Pruning for Pathfinding on Grid Maps*, National Conference on Artificial Intelligence (**AAAI**), 2011.

D. Harabor, A. Botea, and P. Kilby, *Path Symmetries in Uniform-cost Grid Maps*, Symposium on Abstraction Reformulation and Approximation (**SARA**), 2011.

D. Harabor and A. Botea. *Breaking Path Symmetries in 4-connected Grid Maps*, AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (**AIIDE**), 2010.

A. Bauer, V. Botea, M. Brown, M. Gray, D. Harabor and J. K. Slaney, *An Integrated Modelling, Debugging, and Visualisation Environment for G12*, Constraint Programming (**CP**), 2010

5 Industry Articles

D. Harabor. *Fast Pathfinding via Symmetry Breaking*, In AiGameDev.com, 2012.

D. Harabor. *Clearance-based Pathfinding and Hierarchical Annotated A* Search*, In AiGameDev.com, 2009.

6 Invited Presentations

D. Harabor. *Pathfinding @ NICTA ORG*, At NICTA ORG Review, 2012. Invited by ORG Group Leader.

D. Harabor. *Fast and Optimal Pathfinding*, At NICTA TechNet, 2010. Invited by NICTA Lab Director.

D. Harabor. *Pathfinding In Real-Time Video Games*, At NICTA Research Highlights for ACT Chief Minister, 2010. Invited by NICTA Lab Director.

D. Harabor. *Beyond A*: Speeding Up Pathfinding Through Hierarchical Abstraction*, At AiGameDev.com Masterclass, 2009. Invited Tutorial.

7 Professional Activities

- Reviewer (Conference): AAAI (2011, 2012, 2014, 2015), AI (2009, 2013), CP (2010, 2012), ECAI (2012), SoCS (2011, 2013)

- Reviewer (Journal): IEEE Transactions on Computational Intelligence and AI in Games, IEEE Transactions on Systems, Man and Cybernetics: Systems, Journal of Heuristics.