

# Farshid Hassani Bijarbooneh

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## Interests and Objectives

Optimisation, constraint programming, tools for game development, and software development for back-end and front-end systems.

## Education

- 2009–2015 **Doctor of Philosophy (PhD)**, *Uppsala University*, Uppsala, Sweden.  
Constraint Programming for Wireless Sensor Networks. Required skills and deep knowledge of mathematical modelling, probability and statistics, distributed systems, and programming using C++ and constraint solvers.
- 2007–2009 **Master of Science**, *Uppsala University*, Uppsala, Sweden, GPA 4.6.  
Master in Computer Science, focused on Computer graphics, Image analysis, and Constraint programming.
- 1999–2004 **Bachelor of Science**, *University of Science and Technology*, Tehran, Iran, GPA 4.25.  
Bachelor in Applied Mathematics, focused in Combinatoric complexity, Numeric analysis, Probability, and statistics.

## PhD Thesis

- Title *Constraint Programming for Wireless Sensor Networks*
- Supervisor Dr. Justin Pearson, Prof. Pierre Flener, Dr. Edith Ngai, ASTRA research group, Uppsala University.
- Opponent Prof. Kenneth Brown, Insight Centre For Data Analytics, Department of Computer Science University College Cork, Ireland.
- Description I have studied some of the fundamental optimisation problems related to the programming, coverage, mobility, data collection, and data loss of wireless sensor networks, modelled as standalone optimisation problems or as optimisation problems integrated with protocol design. My proposed solution methods came from various fields of research including constraint programming, integer linear programming, heuristic-based algorithms, and data inference techniques.
- Key word Constraint-based Local Search, Optimisation, Mobile Networks, Gecode Solver

## Work Experience

- 2005 **Robotic software developer**, *RASA*, Tehran, Iran.  
Servomotors control and voltage filtering, and post processing on the video captured by the camera.
- 2005–2006 **Industrial radio transmitter software developer**, *RASA*, Tehran, Iran.  
Data Collection, Analysis, and monitoring via serial port and user interface design for displaying meters and sound modulator using Windows CE 5.0.

2006–2007 **Digital image acquisition and image processing**, *Kahroba engineering*, Tehran, Iran. User interface design using only DirectX (DirectDraw) in Windows CE 5.0 for displaying and monitoring the data collected from USB 2.0 with variable data rate.

2008–2009 **Mobile game development (Project in Computer Science)**, *Green Hat People*, Uppsala, Sweden.

Team working and realising an idea for a social mobile game, and implementing the idea using java for mobile. The team came up with the idea to create a game where a song is constructed by the players as they take more pictures of the environment. Each picture is required to be coloured in a specific way requested by the game. The game decides how close each song notes are to the original notes based on the match of the colours and pattern of the pictures taken by the players. By the end of the game the completed song is played and a rating is given. This project was done as part of a course project during the master studies.

## Computer skills

Programming Languages	C/C++, Embedded C++, C#, Qt, Java, Python, Erlang, .Net, PHP, Matlab, LaTeX	Deep Knowledge	Constraint Programming, Mathematical Modelling, Algorithm and Data structure, Serialisation, Computer Networking, Sensor Networks, Database Design, Functional Programming, Testing Methodology
Solvers & Libraries	Gecode, Comet, Choco, Gnuplot	Platforms	Mac OS X, Linux, Windows
Database	MySQL, SQLite		

## Selected Academic Publications

- [1] Farshid Hassani Bijarbooneh, Animesh Pathak, Justin Pearson, Valerie Issarny, and Bengt Jonsson. A constraint programming approach for managing end-to-end requirements in sensor network macroprogramming. In *Proceedings of SensorNets'14, the 3rd International Conference on Sensor Networks*. SCITEPRESS Digital Library, 2014.
- [2] Farshid Hassani Bijarbooneh, Pierre Flener, Edith C.-H. Ngai, and Justin Pearson. Optimising quality of information in data collection for mobile sensor networks. In *Proceedings of IWQoS'13, the 21st International Symposium on Quality of Service*, pages 1–10. IEEE Communications Society Press, 2013.
- [3] Farshid Hassani Bijarbooneh and Martin Jacobsson. Macroprogramming of wireless sensor networks using task graphs and constraint solving. In *Proceedings of SNCNW'12, the 8th Swedish National Computer Networking Workshop*, 2012.
- [4] Farshid Hassani Bijarbooneh, Pierre Flener, Edith C.-H. Ngai, and Justin Pearson. An optimisation-based approach for wireless sensor deployment in mobile sensing environments. In *Proceedings of WCNC'12, the IEEE Wireless Communications and Networking Conference*, 2012.
- [5] Farshid Hassani Bijarbooneh, Pierre Flener, Edith Ngai, and Justin Pearson. Energy-efficient task-mapping for data-driven sensor network macroprogramming using constraint programming. In Robert Dell and Kevin Wood, editors, *Proceedings of ICS'11, the 12th INFORMS Computing Society Conference*. INFORMS Computing Society, 2011.
- [6] Farshid Hassani Bijarbooneh, Pierre Flener, Edith Ngai, and Justin Pearson. Energy-efficient task-mapping for data-driven sensor network macroprogramming using

constraint programming. In Toni Mancini and Justin Pearson, editors, *Proceedings of ModRef'10, the 9th International Workshop on Constraint Modelling and Reformulation*, 2010.

- [7] Farshid Hassani Bijarbooneh, Pierre Flener, and Justin Pearson. Dynamic demand-capacity balancing for air traffic management using constraint-based local search: First results. In Yves Deville and Christine Solnon, editors, *Proceedings of LSCS'09, the 6th International Workshop on Local Search Techniques in Constraint Satisfaction*, volume 5 of *Electronic Proceedings in Theoretical Computer Science*, pages 27–40, 2009.

## Other Publications (Books)

- 2007 **Farshid Hassani Bijarbooneh, and Rahman Farnoosh.**, *Advanced Statistics and Probability for e-learning Students*, IUST e-learning center.
- 2005 **Farshid Hassani Bijarbooneh, and Abolfazl Keshvari.**, *Learning Flash MX 2004*, Naghoos Press.
- 2003 **Farshid Hassani Bijarbooneh.**, *Installing and Maintenance of Windows Operating systems*, Nas Press.
- 2001 **Farshid Hassani Bijarbooneh.**, *Modeling in 3D Studio Max*, ISIRAN Press.

## Languages

Persian	Native	Swedish	Basic
English	Fluent	Arabic	Basic

## Interests

Life/Hobbies	Games, Movies, Anime, Music
Sports	Badminton, Climbing, Swimming

## Reference

- Dr. Justin Pearson **PhD supervisor, ASTRA research group, Uppsala University,**  
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- Prof. Pierre Flener **PhD co-supervisor, ASTRA research group, Uppsala University,**  
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- Dr. Edith Ngai **PhD co-supervisor, Mobile research group, Uppsala University,**  
*Email: edith.ngai@it.uu.se*, Phone: +46 18-471 57 45.
- Dr. Alireza Torshizi **Kahroba engineering, Tehran, Iran, Email: torshizi@kahrobaco.com,** Phone: +98 21-772 22 421.