

Allan Mark Bruce

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With a PhD in Artificial Intelligence and a Masters degree in Electronic / Computing Engineering I have a strong interest in computer programming. I have seven years' experience as a C++ programmer in the games industry setting with Midway Games and CCP Games. I also have three years' experience with Java in an academic environment. My background includes developing multiple AI systems for games, AI simulation methods, AI learning and integrating middleware solutions. I also have experience with technical programming including creating large-scale world terrains and foliage to populate these large-scale worlds. In addition to this I have experience in profiling and optimising CPU code on PC, Xbox360 and PS3 including SPUs. I am an enthusiastic and driven individual with a keen interest in technology and programming which I have developed through personal projects.

Career History

Aug 2009 – Current: Senior AI Engineer, CCP Games

This position involved co-leading the AI team during development of a major game title, Dust 514. During this role I also helped implement an instanced foliage system to populate very large-scale worlds with plants and other rocks. I also helped maintain and optimise the large-scale terrains used in the game too. Since Dust 514 was released I have started work on confidential titles which have given me experience with multiple HMD devices including the Oculus Rift and others. I have also had the opportunity to gain industry experience with iOS game development and Apple OS X development.

Feb 2009 – Jun 2009: Senior Software Engineer, Midway Games Newcastle

Sep 2006 – Feb 2009: Software Engineer, Midway Games Newcastle

In this position I implemented a general AI system which was used for enemy driving, traffic driving and on-foot behaviours. Game titles include Necessary Force (unreleased) and Wheelman.

Mar 2006 – Sep 2006: Research Associate, University of Aberdeen

I was tutoring 4th year AI courses and writing scientific papers based on my PhD work. I also furthered research in methods of multiple diagnoses carrying on from my PhD work.

Oct 2001 – Dec 2005: Tutorial Demonstrator, University of Aberdeen

In this position, I was responsible for demonstrating tutorials and labs for students in all years studying engineering and computing science.

Jun 2001 - Sep 2001: Research Assistant, Electronics Research Group, University of Aberdeen

For this short project I researched areas of the TCP Protocol and its use in the communication between host and server using the HTTP/1.1 protocol.

May 1994 – Sep 2001: Various Sales and mechanic positions throughout school and university.

Key Achievements:

- Co-led the AI team during development of a major game title, Dust 514
- Development of a core AI behaviour system, and bespoke debugger
- Development of AI controlled vehicles
- Contribution of code to middleware partners

Extensive Knowledge and Experience of:

- C++ (Including C++ 11), C, C#, Java, Python
- Object Oriented Programming
- Agile and Scrum methods
- Windows development (x86, x64, mobile)

- Mac development (iOS, OS X)
- HMD development (Oculus and others)
- Visual Studio, XCode, Mono Develop, NetBeans
- Perforce and Araxis Merge
- Multi-threaded environments
- Unreal 3 game engine, Unreal 4, Unity
- Console development including Xbox 360, PlayStation 3 and Playstation 4 plus iOS platforms
- Havok AI
- DirectX and OpenGL
- PIX and SN Tuner profiling tools

Transferable skills:

- Communication including across time zones with international studios
- Working collaboratively with middleware partners
- Delivery of oral presentations of work
- Peer code reviews and development
- Training colleagues

Academic Qualifications

University of Aberdeen (Jun 2002 – Mar 2006): PhD in Artificial Intelligence. "JMorven: A Framework for Parallel Non-Constructive Qualitative Reasoning and Fuzzy Interval Simulation." During which, I tutored 1st, 3rd and 4th year courses in Java, Artificial Intelligence and Bioinformatics.

University of Aberdeen (Sep 1996 – Jun 2002): Masters of Engineering (MEng) in Electronic/Computing Engineering, involving courses in: Software Engineering; VHDL and hardware design; Computer engineering; Digital communications; Network administration; Embedded C programming; Microprocessor design; MATLAB programming; Artificial Intelligence; Logic design and optimisation; Mathematical optimisation & Project Management.

Elgin Academy (Aug 1990 – May 1996) : CSYS Exams: AAB Higher Exams: AAAAC

Interests

In my spare time, I enjoy keeping fit by frequently attending the gym, playing squash, running and rock climbing. In winter I like to get onto the slopes and do a lot of skiing, whilst in summer I can be found either mountain biking or hill walking. I also enjoy photography and have sold several of my photos to people around the world.

I develop software in my spare time. With a friend, I have created a space shooter game programmed in OpenGL and an instant messenger service with clients for native Windows, Java and Windows Mobile. I have also developed several windows based utilities including a Multi-Threaded Fractal Generator with support for AVX instructions, a utility to show where disk space is being used, a Neural Network implementation using genetic algorithms, a minesweeper clone using hexagonal cells and a utility similar to tail on unix.

Other achievements

- Mentored new associate programmers at CCP Games
- Tutored C++ techniques, including C++ 11
- Morale Team Representative for CCP Games
- Fun Club Committee at CCP Games
- Awarded 'Best Student Presentation' at RASC2004 international conference
- Postgraduate representative at Aberdeen University
- Tutoring at Aberdeen University
- Team member in a national Maths Competition at secondary school
- Organised a regional maths competition for Moray, Scotland
- Six gold medals in Maths competitions and a bronze for a Maths Olympiad
- Played for North of Scotland Rugby Under-15s

References: Please contact me for references.

Publications

A. M. Bruce, "JMorven: A Framework for Parallel Non-Constructive Qualitative Reasoning and Fuzzy Interval Simulation", *PhD Thesis, University of Aberdeen*, March 2006

A. M. Bruce and G. M. Coghill, "Implementing Parallelisations in a Fuzzy Qualitative Reasoning Engine", *Proceedings of the 5th annual UK Workshop on Computational Intelligence, UKCI2005*, pp 36-43, London, UK, 2005

G. M. Coghill, A. M. Bruce, C. Wisley and H. Liu, "Integrating Fuzzy Qualitative Trigonometry with Fuzzy Qualitative Envisionment", *Proceedings of the 5th annual UK Workshop on Computational Intelligence, UKCI2005*, pp 97-104, London, UK, 2005

A. M. Bruce and G. M. Coghill, "Parallel Fuzzy Qualitative Reasoning", *Proceedings of the 19th International Workshop on Qualitative Reasoning, QR2005*, pp 110-116, Graz, Austria, 2005

A. M. Bruce and G. M. Coghill, "Implementing Parallelisations in a Qualitative Reasoning Engine", *Proceedings of the 5th International Conference on Recent Advances in Soft Computing, RASC2004*, pp 390-396, Nottingham, UK, 2004