

CONTACT INFORMATION	12 Watson's Street LONDON SE8 4AU	Mobile: {+44, 0} 7901 653 528 Email: <a href="mailto:andrew@aomartin.co.uk">andrew@aomartin.co.uk</a> Website: <a href="https://www.aomartin.co.uk/">https://www.aomartin.co.uk/</a>
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I am a software developer and researcher with commercial experience in the design and implementation of data driven applications where I have been responsible for the database design, server configuration, algorithm implementation, and GUI implementation. I have recently completed a PhD in Artificial Intelligence which focuses on distributed intelligence and decision making. I am seeking placement in a company where my practical experience, and theoretical knowledge of computer science, can best be utilised.

PROFESSIONAL EXPERIENCE Fact360 Ltd., June 2020–to date, 'Chief Technical Officer'.

- Responsible for all matters pertaining to the software produced by Fact360 Ltd., its development, and deployments.

The Centre for Intelligent Data Analytics (TCIDA), Goldsmiths College, Mar 2016–May 2020, 'Senior Technical Analyst'.

- Full-stack development of Fact360 a forensic analysis tool for communications. Includes an ETL tool in Python to interactively preprocess and load a communications dataset into a SQL database, which is then processed with numpy, pandas and network analysis libraries. A flask API provides data to a React Single Page Application.
- Responsible for configuring, deploying and maintaining Fact360 servers with OpenSSH and Linux shell scripts.
- Conceived of Fact360 and, with the management team of TCIDA, successfully pitched for the funding which supported TCIDA for the past two years.
- Sole development and deployment of the *SmartAlec4*, an automated entity-matching tool with an interactive front-end for validation of results. *SmartAlec4* was implemented as a distributed task queue in Python using celery, hosted with Apache2, Django and the django-rest-framework.
- Responsible for the on-boarding, training, and supervising of two research associates.  
**Key skills:** *Python, database design, data wrangling, React*

The Centre for Intelligent Data Analytics (TCIDA), Goldsmiths College, Mar 2015–Mar 2016, 'Centre Administrator'.

- Administration of TCIDA including human resources, purchasing and invoicing, publicity, estates and public lectures.
- Systems administrator including the development, maintenance and deployment of TCIDA's products as an API.  
**Key skills:** *systems administration, documentation, requirements gathering*

Bill.Forward, Jan 2014–Jun 2014, ‘Software Consultant’

- Implementation and testing of new business logic in Java for a successful Y Combinator-backed SaaS startup.
- Design and implementation of a customer data analytics infrastructure using big data tools such as Apache Hadoop and Cassandra.

**Key skills:** *Java JDBC, analytics, Cassandra, Apache Hadoop*

Cold Spring Harbor Laboratory, Oct 2012–Nov 2013, ‘Software Consultant’

- Django/Javascript web app developer to improve online exploration of neuroscientific research and to improve the automation of the workflow in the lab.

**Key skills:** *Django, workflow automation*

PKR Technologies Ltd., Jan 2008–Nov 2011, ‘Test Automation Engineer’

- Using C# and Visual Studio Team Services to develop a suite of web tests to be used and analysed by non-technical members of the Quality Assurance team.
- **Key skills:** *Quality assurance, C#, unit testing, web crawling*

## ACADEMIC EXPERIENCE

PhD in Swarm Intelligence, Goldsmiths College, University of London (Nov 2011–Apr 2020).

Thesis: *Local Halting Criteria for Stochastic Diffusion Search Using Nature-inspired Quorum Sensing.*

- Research and analysis of the published variants of Stochastic Diffusion Search (SDS), a swarm intelligence metaheuristic and an accompanying Python library.
- Developed Quorum-sensing SDS, a nature-inspired search algorithm which infers global convergence from local information.
- Insight into the behaviour of natural swarms modelled with Quorum-sensing SDS.
- History of Artificial Intelligence, the strengths and limitations of symbolic logic and Connectionist architectures.

**Key skills:** *Python, computability, stochastic optimisation, algorithm analysis.*

MSc, Cognitive Computing, Goldsmiths University of London (2009–2010)

Tuition and coursework on Artificial Intelligence, Cognitive Science and Philosophy Of Mind.

**Key skills:** *neural networks, Java, philosophy of mind.*

BSc Computer Science and Cybernetics, University of Reading (2003–2006)

Modules included mechanical engineering, electronic engineering and software engineering for automation, and the philosophy thereof.

**Key skills:** *computer graphics, control theory, C#, C++, Delphi.*

## SKILLS

**Software development:** I have over five years commercial experience in Python, and over ten years daily experience developing with Python and Java for AI research and personal projects. I most commonly work at the back end, designing MySQL or PostgreSQL databases, implementing APIs with Django or Flask, and building server side applications code that leverages AI research with numpy, pandas and SQLAlchemy (a Python ORM). My front-end experience includes dynamic websites in Django and a number of versions of a Single-Page App in React.

**Linux administration:** I am comfortable installing Linux with manual partitioning, configuring users and groups including system users, and configuring services. I use Bash or Python shell scripts where possible to avoid manual intervention. I am also experienced in deploying to environments running SELinux.

**Documentation:** I frequently write progress reports and documentation when working on projects to encourage collaboration and to ease returning to a dormant project. Where feasible I develop in noweb (a literate programming tool), otherwise I use Jupyter notebooks or Sphinx documentation generator.

My preferences are for: vim over emacs, spaces over tabs, a tab size of 4, CLI over GUI, L<sup>A</sup>T<sub>E</sub>X over Word/Writer, and the Apache License 2.0 over GPLv3, but I prioritise team consistency.

**PUBLICATIONS** **Martin, A. O.** *Local Halting Criteria for Stochastic Diffusion Search Using Nature-inspired Quorum Sensing* April 2020, Goldsmiths College, University of London. (PhD. thesis)

Bishop, J. M. and **Martin, A. O.** and Robinson, E. J. H. and Myatt, D. R. *Local termination criteria for Swarm Intelligence: a comparison between local Stochastic Diffusion Search and ant nest-site selection* Transactions on Computational Collective Intelligence XXXII, pp. 140–166, 2019, Springer. (Journal article)

Bishop, J. M. and **Martin, A. O.** and Robinson, E. J. H. *Local termination criteria for Stochastic Diffusion Search: a comparison with the behaviour of ant nest-site selection*, International Conference on Computational Collective Intelligence, pp. 474–486, 2016, Springer. (Conference paper)

Wang, M. and Haberland, V. and Yeo, A. and **Martin, A. O.** and Howroyd, J. and Bishop, J. M. *A probabilistic address parser using conditional random fields and stochastic regular grammar*, 2016 IEEE 16th International Conference on Data Mining Workshops (ICDMW), pp. 225–232, 2016, IEEE. (Conference paper)

Bishop, J. M. and **Martin, A. O.** (Eds.) *Contemporary sensorimotor theory*, Springer, 2014. (Book)

Bishop, J. M. and **Martin, A. O.** *Contemporary Sensorimotor theory: a brief introduction* Contemporary sensorimotor theory, pp. 1–22, 2014, Springer. (Book chapter)

**Martin, A. O.** *Book review: Why Red Doesn't Sound Like a Bell* AISBQ Oct 2012, AISB.

(Periodical article)

**Martin, A. O.** On “Radical post-cognitivism: new approaches to intelligence and the mind” the inaugural lecture of Professor Mark Bishop AISBQ June 2012, AISB. (Periodical article)

**Martin, A. O.** and Bishop, J. M. *Developments in JK O’Regan’s Sensorimotor account of Consciousness* Foundations of Enactive Cognitive Science, Feb 2012. (Conference poster)

## OTHER ROLES

Since 2015 I have co-organised the Loebner Prize, the longest running Turing Test competition, held at Bletchley Park in 2016–2018 in honour of Alan Turing.

In April 2015 I was asked on BBC Radio 4’s Today programme to discuss [if an algorithm could run the government](#).

Since 2014 I have been the secretary of the AISB (Society for the study of Artificial Intelligence and the Simulation of Behaviour), the world’s oldest AI society, including an annual convention and a quarterly publication.

In 2014 I co-edited the book *Contemporary Sensorimotor Theory* with J. Mark Bishop published by Springer.

In 2014 I co-organised *AISB50*, a large multi-track conference.

In 2012 I co-organised the *Sensorimotor Theory Workshop*. A day of discussion on the Sensorimotor account of Perception, Consciousness and Robotics, its development and contemporary state.