Sizhe Yuen

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Education

2019-Present	**University of Southampton**, PhD in Engineering (Near Completion) *Epigenetics crossover for multi-objective optimisation* • Analysed existing Evolutionary Computation algorithms based on evolutionary concepts from the Extended Evolutionary Synthesis, and identified a gap in epigenetic inheritance. • Developed a novel epigenetic blocking mechanism and created a detailed benchmarking suite to test and compare existing algorithms with the new mechanism. • Investigated the use of hyperparameter optimisation to find the best performing results on dynamic multi-objective optimisation problems. • Applied the final results to a real world voyage optimisation problem to reduce fuel consumption and voyage times of international shipping journeys.
2014-2019	**University of St. Andrews**, MSci (Hons) Computer Science First Class
2012-2014	**Shatin College, Hong Kong**, Bilingual IB Diploma

Publications

S. Yuen, T. H. G. Ezard, A. J. Sobey. Epigenetic Opportunities for Evolutionary Computation. In: *The Journal of Royal Society Open Science* 10.5 (2023) https://doi.org/10.1098/rsos.221256

S. Yuen, T. H. G. Ezard, A. J. Sobey. The effect of epigenetic blocking on dynamic multi-objective optimisation problems. In: *Proceedings of the Genetic and Evolutionary Computation Conference Companion (GECCO '22).* (2022) https://doi.org/10.1145/3520304.3529022

S. Yuen, T. H. G. Ezard, A. J. Sobey. Comparing the performance of genetic algorithms and particle swarm optimisation algorithms for multi-objective optimisation problems. (In preparation for *Evolutionary Computation*)

Presentations

November 2022	**Boldrewood Lunchtime Seminar, University of Southampton** - *Automatic Player Identification in Dota 2*
July 2022	**MIT Quest for Intelligence, Massachusetts Institute of Technology** - *The effect of epigenetic blocking on multi-objective genetic algorithms*
July 2022	**Boldrewood Lunchtime Seminar, University of Southampton** - *The effect of epigenetic blocking on multi-objective genetic algorithms*
February 2021	**Boldrewood Lunchtime Seminar, University of Southampton** - *Epigenetic opportunities for evolutionary computation*
September 2020	**Boldrewood Lunchtime Seminar, University of Southampton** - *Comparing the performance of genetic algorithms and particle swarm optimisation algorithms for multi-objective optimisation*

Previous projects

Dota 2 player prediction *MSci dissertation*
Used machine learning algorithms to predict the player behind the keyboard through behavioural features such as mouse movements and in-game decisions. Features were extracted and parsed from match replays, then clean and refined through a data pipeline. Finally, the performance of different combinations of features and machine learning techniques were compared.

Graph matching with lobsters *BSc dissertation*
Applied computer vision algorithms from opencv on images of lobsters to represent their bodies as attributed graphs by detecting points of interest. Graph matching techniques were then used to discover and measure properties such as the lobster's size and maturity.

Work experience

University of Southampton January 2020-June 2022

- *Software Engineering Group Supervisor* - Led groups of second year undergraduate students on the software engineering group module lasting three months at a time. Reviewed and provided feedback on multiple iterations of the software engineering process with agile development methods, acting as both a critical friend and project customer for the students.
- *MSc Mentor* - Mentored groups of masters students, providing support, guidance, and presenting training material once a week. Training material included topics of reading, writing, citing, presenting, and time management.
- *Lab Demonstrator* - Demonstrated on undergraduate modules for advanced techniques with Java, and functional programming with Haskell.

Skyscanner, Edinburgh *Software Engineering Intern* June 2018-September 2019
Part of the data platform team which provided logging, monitoring and alerting services for other teams in the company, centred around real time data. The stack consisted of open source technologies such as Kafka, OpenTSDB, Bosun, Grafana, and ELK (Elasticsearch, Kibana) deployed via containers on AWS.

New Modern Technology Ltd. Hong Kong *Programmer Trainee (Summer)* June-July 2017
Worked on development for a financial analysis system including user interface, backend functionality and data maintenance with frameworks such as J2EE, Hibernate and GWT. Supported a production software management suite with compatibility testing and maintenance.

KPMG China, Hong Kong *Trainee* May-August 2016
Wrote VBA modules in Word to create custom toolbars with useful macros. Designed HTML pages with CSS and JS for new branding and was responsible for internet and intranet updates for the multimedia team.

HongKong International Terminals *Summer Intern* June-August 2015
Wrote VBA macros in Excel to transform shipping data logs, helped business analyst with writing user specifications for system updates, and worked on a project with other interns to raise fitness awareness in the workplace.

Languages and Frameworks

Programming Languages	Java, Python, C, Haskell, Javascript, Go
Tools and Frameworks	Linux, Git, pandas, scikit-learn, LaTeX, Travis-CI, Slurm