Davin Choo
davinchoo.com

cxjdavin@gmail.com

EDUCATION

NATIONAL UNIVERSITY OF SINGAPORE	Singapore
Computer Science PhD	Aug 2021 – Ongoing

- AI Singapore (AISG) PhD Fellow

ETH ZÜRICH	Zürich, Switzerland
Computer Science MSc	Jul 2020

- *Focus track*: Theoretical Computer Science
- *Masters Thesis*: Studied the statistical-computational gap of sparse tensor PCA, and designed distinguishing & recovery algorithms

NATIONAL UNIVERSITY OF SINGAPORE	Singapore
Computer Science and Mathematics Double Degree Programme	May 2016

- *Computer Science*: Completed focus areas in "Algorithms & Theory" and "Artificial Intelligence"
- *Mathematics*: Majored in Applied Mathematics with additional Mathematics courses such as graduate Recursion Theory
- *Honours*: First Class Honours in Computer Science, First Class Honours in Applied Mathematics, and Dean's List (top 5%)
- *Computer Science Thesis*: Designed methods to maintain dynamic maximal independent sets
  Nominated for NUS Outstanding Undergraduate Researcher Prize (an annual, university-wide competition)
- *Mathematics Thesis*: Studied notions of Kolmogorov complexity of binary strings in automata theory and CFGs
- *University Scholars Programme*: A selective (180 students) multidisciplinary academic programme for undergraduates
  Awarded President's Honour Roll which recognizes outstanding academic accomplishments and student-led co-curricular activities

PUBLICATIONS

- <u>Davin Choo</u>, Tommaso d'Orsi. The Complexity of Sparse Tensor PCA. Conference on Neural Information Processing Systems (NeurIPS), 2021.

- Mélanie Cambus, <u>Davin Choo</u>, Havu Miikonen, Jara Uitto. Massively Parallel Correlation Clustering in Bounded Arboricity Graphs. International Symposium on Distributed Computing (DISC), 2021.

- <u>Davin Choo</u>, Christoph Grunau, Julian Portmann, and Václav Rozhoň. k-means++: few more steps yield constant approximation. International Conference on Machine Learning (ICML), 2020.

- <u>Davin Choo</u>, Mate Soos, Kian Ming A Chai, and Kuldeep S Meel. Bosphorus: Bridging ANF and CNF Solvers. Design, Automation & Test in Europe Conference & Exhibition (DATE), pages 468–473. IEEE, 2019.

- Jing Lim, Joshua Wong, Minn Xuan Wong, Lee Han Eric Tan, Hai Leong Chieu, <u>Davin Choo</u>, and Neng Kai Nigel Neo. Chemical Structure Elucidation from Mass Spectrometry by Matching Substructures. Machine Learning for Molecules and Materials (NeurIPS Workshop), 2018.

WORK EXPERIENCE

ETH ZÜRICH	Zürich, Switzerland
Post-diplomand (Post-graduate research position under David Steurer)	Aug 2020 – Mar 2021
DSO NATIONAL LABORATORIES	Singapore
Research Scientist — Information Exploitation Lab (IEL)	Jun 2016 – Sep 2018

- Applied AI techniques to security related problems, including cryptanalysis, SAT solving and reverse engineering

DSO NATIONAL LABORATORIES	Singapore
Research Intern — Cognitive Fusion Lab (CFL)	May 2013 – Jul 2013

- Worked on a research project to improve the performance of speech-to-text recognition

NATIONAL UNIVERSITY OF SINGAPORE	Singapore
Research Assistant — SeSaMe (Augmented Reality Library)	Aug 2012 – Dec 2012

- Developed an algorithm that identifies spatial coordinates and orientation of user within a building using visual landmarks

DEFENCE SCIENCE & TECHNOLOGY AGENCY (DSTA)	Singapore
Research Intern — C4I development (PC8)	Feb 2011 – May 2011

- Designed an in-house Unmanned Aerial Vehicle (UAV) algorithm that maps image points to actual geolocation coordinates

Teaching and Service

National University of Singapore	Singapore
Teaching Assistant — GET1031, GEI1000	Aug 2021 – Ongoing

- Collaborated with 2 faculty members on refining teaching materials and pedagogies to suit student needs
- Led discussion groups for a total of 64 students on the topic of computational thinking

National University of Singapore	Singapore
Teaching Assistant — CS1101S, CS1231, CS2020, CS3230, CS4344, GET1031	Aug 2012 – May 2016

- Collaborated with over 8 faculty members on refining teaching materials and pedagogies to suit student needs
- Led discussion groups for a total of 86 students across 6 different courses on topics including programming methodology, computational thinking, data structures and algorithms, design and analysis of algorithms, and discrete structures
- Averaged a feedback score of 4.7/5 across all tutored courses (faculty average: 4.16/5) with 15 nominations for Best Teaching

National University of Singapore	Singapore
University Scholars Programme (USP) Mentor	Aug 2012 – May 2016

- Set up a cohesive network for Computer Science students in the USP to help juniors navigate through a variety of academic concerns

Temasek Junior College	Singapore
Course Instructor	Jan 2014 – May 2014

- Initiated a student outreach programme to encourage young students to explore the field of Computer Science

Additional Information

- *DSTA-DSO Undergraduate Scholarship*: Awarded in 2011
- *Languages/Technologies*: Java, C++, Python, Javascript, MiniZinc, C, C#, Scheme (Basic), Prolog (Basic)
- *Computer Science UROP*: Worked on a reductionist approach to computer vision with applications in robot grasping with uncertainty
- *(Class project) RoCoCo*: Used constraint programming to design a web-based round robin tournament scheduling algorithm
- *(Class project) Poker AI Bot*: Implemented a 2 Player Limit Texas Hold 'em Poker bot using Monte Carlo Tree Search techniques
- *(Class project) Robust Airport Scheduling*: Devised and analysed algorithms for airport gate scheduling. Solution was robust enough to minimise collisions when random delays were introduced to perturb a dataset of actual departure and arrival times