

# Gerald Huang

## Curriculum Vitae

Website: [huanggerald.com](https://huanggerald.com)

### – Research Interests –

Algorithms (parameterised, exact, approximation, lower bounds), computational geometry and topology, complexity theory, combinatorics (algebraic, enumerative, extremal), combinatorial optimisation, number theory.

### – Education –

2018 – 2024

**University of New South Wales**

*B. Sc. in Computer Science with Honours, B. Sc. in Mathematics (Pure Mathematics) with Distinction*

- **Supervisor:** Prof. Serge Gaspers.
- UNSW Taste of Research Scholar, 2023.

### – Publications –

#### Research

Each *published* paper can be accessed via the link if viewing on a desktop; they can also be accessed via my [website](https://huanggerald.com).

- [1] Quantum Algorithms for Steiner Trees. With Serge Gaspers. 2023.
- [2] Implementation and Analysis of Quantified Boolean Formula Encodings for Planning and Verification Problems. With Abdallah Saffidine. 2022 – 2023.

#### Books

Books that I have either released or are in the process of being released. Chapter preprints are available on my [website](https://huanggerald.com).

- [1] *An Invitation to Algorithm Design and Analysis*. 1st edition, 2024.
- [2] *An Invitation to Combinatorics*. 1st edition, Springer Undergraduate Texts in Mathematics and Technology, 2024.
- [3] [ATAR Notes HSC Year 12 Mathematics Extension 1 Complete Course Notes](#). 1st edition, ATARNotes, 2020.
- [4] [ATAR Notes HSC Year 12 Mathematics Extension 1 Topic Tests](#). 1st edition, ATARNotes, 2020.

#### Notes and Articles

You can find a more complete set of notes and articles that I've written on my [website](https://huanggerald.com).

- [1] [Derandomisation and the Nisan-Wigderson Construction](#), September 2023.
- [2] [The Sunflower Lemma and its Modification](#), September 2023.

## – Teaching –

The rating (out of 6.0) comes from the students' evaluation of the instructor quality throughout the course. Undergraduate teaching is done through tutorials. Teaching is separated by university.

### University of New South Wales

Term	Course number and title	Rating (where applicable)
Term 3, 2023	COMP9101: Design and Analysis of Algorithms	N/A
Term 3, 2023	COMP4418: Knowledge Representation and Reasoning	N/A
Term 3, 2023	COMP3121: Algorithms and Programming Techniques	N/A
Term 3, 2023	COMP2521: Data Structures and Algorithms	
Term 3, 2023	MATH1041: Statistics for Life and Social Sciences	N/A
Term 3, 2023	Mathematics Drop-in Centre	N/A
Term 2, 2023	COMP9900: Information Technology Project	6.0 / 6.0
Term 2, 2023	COMP3900: Computer Science Project	5.25 / 6.0
Term 2, 2023	COMP3153: Algorithmic Verification	5.48 / 6.0
Term 2, 2023	COMP3121: Algorithms and Programming Techniques	5.31 / 6.0
Term 2, 2023	Mathematics Drop-in Centre	N/A
Term 1, 2023	COMP9101: Design and Analysis of Algorithms	5.08 / 6.0
Term 1, 2023	COMP4141: Theory of Computation	5.63 / 6.0
Term 1, 2023	COMP3821: Extended Algorithms and Programming Techniques	5.51 / 6.0
Term 1, 2023	COMP3121: Algorithms and Programming Techniques	5.48 / 6.0
Term 1, 2023	Mathematics Drop-in Centre	N/A
Term 3, 2022	COMP9900: Information Technology Project	5.75 / 6.0
Term 3, 2022	COMP9101: Design and Analysis of Algorithms	N/A
Term 3, 2022	COMP4418: Knowledge Representation and Reasoning	N/A
Term 3, 2022	COMP3121: Algorithms and Programming Techniques	N/A
Term 3, 2022	Mathematics Drop-in Centre	N/A
Term 2, 2022	COMP9101: Design and Analysis of Algorithms	N/A
Term 2, 2022	COMP3153: Algorithmic Verification	5.40 / 6.0
Term 2, 2022	COMP3121: Algorithms and Programming Techniques	N/A

### University of Sydney

Semester	Course number and title	Rating (where applicable)
Semester 2, 2023	COMP2022: Models of Computation	N/A
Semester 1, 2023	COMP3927: Advanced Algorithm Design	N/A
Semester 1, 2023	COMP3027: Algorithm Design	N/A

## – Talks and Lectures –

### Student Talks

Student talks that come from societies are marked with \*, whilst student talks that come from conferences are marked with o.

[1] [On the Transcendence of  \$e^\*\$](#) , UNSW Mathematics Society, June 2023.

[2] [When Combinatorics and Flow Networks Intersect\\*](#), UNSW Computer Science and Engineering Society, UNSW Competitive Mathematics and Programming Society, March 2023.

## – Extra-curricular Activities –

### Leadership and Societies

I have been involved in multiple leadership positions in faculty-focused societies.

[1] [UNSW Mathematics Society](#): Education Subcommittee (2019, 2022, 2023), Director of Education (2020), Society Executive (2021).

[2] [UNSW Computer Science and Engineering Society](#): Education Subcommittee (2023).

### Reading Group

I am also actively involved in a reading group for *Advanced Topics in Theoretical Computer Science* run by the Faculty of Computer Science and Engineering.