Wern Juin Gabriel Ong

gong@bowdoin.edu

48 Smith Union

Brunswick, ME 04011

EDUCATION

Bowdoin College
Brunswick, ME
B.A. Mathematics & Minor in Classical Greek (Leave 2020-21)
August 2019 - Exp. May 2024

Harvard University
Cambridge, MA
Visiting Student
September 2023 – December 2023

Columbia University in the City of New York
New York City, NY
Visiting Student, Dept. of Mathematics
August 2020 - June 2021

Mont' Kiara International School
Kuala Lumpur, Malaysia
High School Diploma & IB Diploma
August 2017 - May 2019

EXPERIENCE

Nonlinear Algebra – Max Planck Institute for Mathematics in the Sciences
Leipzig, Germany
Visiting Researcher (Mentor: P. Breiding)
May 2022 - August 2022

- Proved several results relating to the intersection theory of plane conics.
- Developed computational methods for investigating the real geometry of enumerative problems.

The Xena Project – Imperial College London
London, United Kingdom
Independent Contributor
June 2021 - August 2021

- Formalized Chapter 1 of Hardy and Wright's *An Introduction to the Theory of Numbers* in the `Lean` Automated Theorem Prover.

Karanicolas Lab – Fox Chase Cancer Center & Temple Medical School
Philadelphia, PA
Researcher (Mentor: J. Karanicolas)
May 2020 - June 2021

- Developed deep learning models to process large-scale biological data for the identification of lead compounds with a view to kinase inhibitors.
- Assisted principal investigator in preparing grants for the National Institutes of Health and National Science Foundation.
- Presented research at several academic conferences.

RESEARCH IN MATHEMATICS

Authors are ordered alphabetically by last name.

- P. Breiding, J. Lindberg, **W. Ong**, L. Sommer. "Real Circles Tangent to 3 Conics." *Le Matematiche, Vol. 78, No. 1.* [`arXiv`][Journal]

- **W. Ong**, A. Seigal. "Neural Networks and Discriminant Loci of Parametrized Polynomial Systems: First Examples" *In Preparation.*

RESEARCH IN COMPUTATIONAL BIOLOGY

Authors are ordered by contribution. † Indicates equal contribution.

- G. Andrianov, **W. Ong**, I. Serebriiskii, and J. Karanicolas. "Efficient Hit-to-Lead Searching of Kinase Inhibitor Chemical Space via Computational Fragment Merging." *J. Chemical Information and Modeling, Vol. 61, No. 12.* `doi.org/10.1021/acs.jcim.1c00630`

- **W. Ong**[†], P. Kirubakaran[†], J. Karanicolas. "How Current Neural Network Models for Kinase-Inhibitor Affinity Predictions Generalize Poorly." In submission at *J. Chem. Inf. Modeling*, online ahead of print `doi.org/10.1101/2023.09.04.556234`

Selected Presentations

A full list of presentations is available at `wgabrielong.github.io/talks`.

- "Neural Networks and Discriminant Loci of Parametrized Polynomial Systems: First Examples." SIAM Applied Algebraic Geometry, Eindhoven, The Netherlands, July 2023.

- "Enumerative Geometry: Past, Present, and Future." Undergraduate Seminar, University of Toronto – Scarborough, June 2023.

- "Real Circes Tangent to Three Conics." Algebraic Geometry Northeastern Series, UMass Amherst, November 2022.

- "Group Equivariant Neural Networks in Computer Vision." Presented to the Algebraic Vision Network at Czech Technical University – Prague, May 2022.

- "Sentences and Strings: An Introduction to Model Theory." Presented to the Undergraduate Mathematics Society at Columbia University as part of the Summer Learning Seminar 2021.

Awards and Honors

- **Sarah and James Bowdoin Scholar (2022):** (Dean's List) For exceptional academic performance.
- **Smyth Mathematics Prize (2022):** For most exceptional performance in mathematics coursework.
- **$100\pi - \varepsilon$ Prize (2020):** For extraordinary inspiration and joy for the pursuit of mathematics.

Service to the Profession

- **Summer of Math Exposition 2023:** Peer judge for the Summer of Math Exposition, hosted by Grant Sanderson (aka 3Blue1Brown).
- **Mathematics Department Visiting Faculty Search (Spring 2023):** Assisted in small-group student interviews for the visiting assistant professor search in Spring 2023.
- **Bowdoin Science Experience (Fall 2021 & 2022):** Organized an orientation trip introducing students historically underrepresented in the sciences to the Bowdoin science departments and other academic support services.
- **Mathematics Department Tenure-Track Faculty Search (Spring 2020):** Assisted in small-group student interviews for the tenure-track faculty search in Spring 2020.
- **Mathematics Department Visiting Faculty Search (Summer 2020):** Assisted in small-group student interviews for the visiting assistant professor search in Summer 2020.

Skills

- **Programming:** Python (TensorFlow, SKLearn, Pandas, NumPy); Julia; Wolfram Mathematica; Lean
- **Computational Skills:** Google Suite, Microsoft Office, LaTeX
- **Languages:** English (Native), Classical Greek (Scholarly), Spanish (Working), Mandarin (Spoken), Malay (Spoken)
- **Certificates and Training:** WMA Wilderness First Responder (exp. 2023), PADI Master SCUBA Diver