IAN CHOW

Toronto, ON | ia.chow@mail.utoronto.ca | 416-834-8948 | References available upon request

EDUCATION

HONOURS BACHELOR OF SCIENCE **September 2018 – PRESENT**

University of Toronto

Astronomy and Physics Specialist, Statistics Major, and Mathematics Minor – Current cGPA of **3.58/4.0**

- **Astronomy and Physics** courses include:
  - Astrophysics (primarily stellar structure/evolution, nucleosynthesis, and cosmology), Practical Astronomy, Ordinary & Partial Differential Equations, Advanced Classical Mechanics, Quantum Mechanics, Relativistic Electrodynamics, Nonlinear Physics, Time-Series Analysis
- **Statistics** courses include:
  - Probability & Statistics, Data Analysis, Surveys, Sampling & Observational Data, Statistical Computation, Machine Learning, Bayesian Statistics

RESEARCH EXPERIENCE

RESEARCH PROJECT IN ASTRONOMY **September 2021 – April 2022**

University of Toronto

Supervisors: Dr. Samuel Hadden, Prof. Hanno Rein

- Analyzed radial velocity data from strongly interacting exoplanetary system of the star HD 45364, using N-body simulation and least-squares optimization in Python to determine best-fit planetary parameters
- Improved bounds on planet masses and orbital inclinations using grid search and dynamical stability analysis
- Developed N-body models of planet migration, using Bayesian inference and Markov chain Monte Carlo sampling, to explain development of mean motion resonance in the system for several scientific presentations and a final written report

SUMMER UNDERGRADUATE RESEARCH FELLOWSHIP (SURF) **May 2022 – August 2022**

Canadian Institute for Theoretical Astrophysics (CITA), University of Toronto

Supervisors: Dr. Samuel Hadden, Prof. Hanno Rein, Prof. Norman Murray

- Continued earlier research on HD 45364 as part of the SURF program run by CITA
- Derived analytic Hamiltonian model for convergent orbital migration under semi-major axis and eccentricity damping forces, to determine the effect of damping on the system's planetary dynamics
- Compared N-body and restricted Keplerian models of the system under a Bayesian framework, using Markov chain Monte Carlo and dynamic nested sampling, to determine equilibrium configuration of the system for several scientific talks delivered at CITA

EMPLOYMENT EXPERIENCE

SOFTWARE DEVELOPMENT INTERN – **Innovere Medical** **June 2020 – September 2020**

Markham, ON, Canada

- Automated detection of dropouts in time-series audio data from an MRI scanner wireless audio system using MATLAB and Python
- Performed testing of TechSmart, an in-house multimedia app for patient use during MRI exams, with company's software development team

SOFTWARE DEVELOPMENT INTERN – **Plantiga Technologies** **July 2019 – August 2019**

Vancouver, BC, Canada

- Developed methods to improve foot impact detection and compute physical fitness heuristics from time-series acceleration (g-force) data using signal processing techniques in Python (SciPy)
- Field-tested and validated hardware such as sensor shoe insoles that track movement
- Conducted data acquisition from individuals and company partners including physiotherapy clinics, universities, and professional sports teams
- Produced documentation of company products for clients

RESEARCH INTERN – **Synced Review** **June 2017 – August 2017**

Toronto, ON, Canada

- Conducted literature review focusing on advancements in reinforcement learning used in adversarial-search board and video game AI programs for a company report
- Worked with company team to research and edit articles on latest machine learning industry trends and robotics technology

SKILLS

TECHNICAL SKILLS:

- **Programming**: Python (NumPy, SciPy, Pandas), R, MATLAB, JavaScript
- **Software**: Git/GitHub, LaTeX, Microsoft Excel

LANGUAGES:

- English (professional), French (intermediate), Cantonese (spoken)

EXTRACURRICULARS

VICE PRESIDENT, WRITER, EDITOR & COMPETITOR **January 2019 – PRESENT**

University of Toronto Academic Trivia Club

- Represented the University of Toronto at 20+ intercollegiate quiz tournaments across Canada and the United States as a player, including the 2022 Intercollegiate Championship Tournament in Chicago
- Elected Vice President organizing U of T club practices and social events, managing club Discord server with 100+ members, and moderating tournament games during the 2020-2021 and 2021-2022 academic years
- Wrote and edited questions across a wide range of academic disciplines for Ontario Hybrid, WORKSHOP, and Canadian Novice, collegiate tournaments played by 25+ teams across Canada, the U.S., and the U.K.
- Organized and directed several collegiate and high school tournaments, including the 2021 University of Toronto Collegiate Novice tournament played by 16 teams from Canada and the U.S.

AWARDS

DEAN'S LIST SCHOLAR – University of Toronto, Faculty of Arts and Science **Fall 2020 – PRESENT**