Wensong Dai

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Education

University of Toronto **Sep. 2024 – May 2029**

Bachelor of Applied Science and Engineering in Engineering Science *CGPA: 3.98*

Relevant Coursework

- Calculus
- Data Struc. & Algorithm
- Linear Algebra
- Structures & Materials
- Classical Mechanics
- Engineering Design
- Circuit Analysis
- Molecules & Materials

Career Experience & Leadership

Canada Learning Code (CLC) **June 2021 – August 2023**

Teen Ambassador, Mentor *Vancouver, B.C.*

- A large non-profit organization in Canada for programming skills enrichment
- Lead seminars and workshops, mentored students with a class size over 50, focusing on the Python language.
- Cooperated with high school instructors to design a high school introductory computer science coursework.

Computer Science & Digital Media Club **September 2021 – June 2024**

Co-President, Instructor *Vancouver, B.C.*

- One of the largest school STEM clubs, divided into two portions: Computer Programming and Website Design.
- Held lectures on Java and Python, guided members to understand coding structure and programmed mini-games.
- Created mock AP exams and help sessions regularly when approaching an exam or competition, i.e. CCC..

Researches & Projects

COVID-19 Cases and Density Data Visualization & Inference | *Java, MATLAB* **May 2023 – August 2023**

- Worked with Dr. Stephanie Black, PhD, from New Hampshire University.
- Created a Java-based epidemiological engine that ingests historical COVID-19 case counts and regional density metrics, lets users append new-year inputs via a lightweight GUI.
- Implemented a forecasting module that extrapolates next-year case totals and hotspot intensity from prior patterns.
- Integrated a MATLAB program to visualize statistical outputs: Time series and heatmap density plots.

Improving Clay Reclamation: Small Studio Pugmill | *Arduino, Python, Onshape* **January 2025 – April 2025**

- Together with a Praxis Team, Partnered with stakeholder Anne Gibson from Kalon Ceramics, GTA, to understand user needs and operational limitations in small studio clay reclamation.
- Developed and tested a small-scale automated pugmill system of mechanical mixing and contaminant filtration.
- Utilized Arduino for motor circuit and Onshape for CAD modelling; validated through prototyping and user feedback.

Photoplethysmogram (PPG) Heart Rate Variability Monitor | *Python, Streamlit, NeuroKit2* **May 2025 – Present**

- Implemented a full PPG pipeline: red-channel extraction, band-pass filtering, peak detection, and IBI cleaning to compute HR and HRV (SDNN, RMSSD, pNN50, LF/HF via Welch PSD, sample entropy).
- Designed a rule-based rhythm screener (sinus, AF-suggestive, VF flags) with on-screen explanations.
- Built a responsive Streamlit UI with onboarding pages; Deployed a reproducible web app on Streamlit Community Cloud

Awards & Honors

Euclid Mathematics Competition, April 2024: Score: 95/100, Rank: 42/23327, Group II

Chem 13 News Chemistry Competition, May 2024: Score: 38.75/40, 1st place in Canada, Rank 7/1834

The Governor General's Academic Medal, June 2024: Top Academic Graduate, awarded by the Canadian Government to the graduate with the highest numeric average.

UBC Physics Olympics, March 2023:Physics Competition at the University of British Columbia. Rank 5/68 schools

Technical Skills

Languages: Python, Java, C, HTML, MATLAB **Developer Tools:** VS Code, Arduino, Onshape, Android Studio

Area of Interest: Medical Devices & Instrumentation; Medical Imaging; Cellular/Molecular Biology; Neurosciences

Extracurricular

Lloyd Auckland Invitational Mathematics Workshop **May, 2023, Attendee**

- Selected as 1 of 70 out of 35000 global entrants for top performance in the Fermat Mathematics Contest.

The Royal Conservatory of Music: Piano & Harmony Level 9 **August, 2022**