ALINA CAI

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EXPERIENCE

Software Engineer | *WATonomous* *Sep 2023 – Present*
- Utilized **reinforcement learning** to enhance behavioural planning and local trajectory optimization for **L4 vehicle autonomy**
- Rendered general route planning with **PyTorch**, **C++**, **Python**, and **Linux** to develop vehicle mapping and navigation capabilities

Director of Engineering & Operations | *Google Developer Student Club University of Waterloo* *Aug 2023 – Present*
- Coordinated **software developer** and **data science** teams, ensuring optimized resource allocation on new technology initiatives
- Orchestrated code reviews, continuous integration, and automated testing for open-source projects servicing **200** members

Software Engineer Intern | *BluWave-ai* *May 2023 – Sep 2023*
- Devised an energy consumption predictor for California, deploying the project pipeline on a **Google Cloud VM** through **Docker**
- Minimized mean average error by **52.3%**, employing **Prophet** and **LGBM** regressors to optimize **time series forecasting** accuracy
- Leveraged big **data engineering** to automate the processing and storage into relational databases from the **California ISO API**
- Administered extensive **data analysis**, achieving real-time **visualization** through an interactive **Grafana** dashboard with **SQL**

President | *Lisgar Collegiate Institute Computing Club* *Sep 2018 – Jun 2022*
- Organized and facilitated weekly technical and networking workshops, fostering programming interest to over **30** students
- Mentored **Python** foundations utilizing online resources and oversaw the development of an **Arduino** traffic project using **C++**

AWARDS

Euclid Mathematics Contest	99.6% percentile out of 22,372 contestants	*Apr 2022*
Canadian Computing Contest	83.5% percentile out of 3,262 contestants	*Feb 2022*
Canadian Music Competition	Top 5 national piano finalist	*Jun 2018*

PROJECTS

AI Tower Defense (Citadel | Citadel Securities Summer Invitational Terminal) ⌗ | *Python, VS Code, GitHub* *Aug 2023*
- Formulated a custom algorithm within a live e-sports tournament, integrating concurrent simulation of proactive pathfinding

Weather in Air Traffic (Citadel | Citadel Securities Summer Invitational Datathon) ⌗ | *Python, XGBoost, Google Colab* *Jul 2023*
- Constructed an air traffic model using **XGBoost** with **96%** accuracy, articulating key findings in a **quantitative research** report
- Maximized model precision to **95.7%**, conducting **Exploratory Data Analysis** to discover **feature importance** in flight delays
- Employed **over-sampling** with **scikit-learn** to solve class imbalance in regional weather, increasing model F1-score to **95.9%**

Titanic Survival Predictor ⌗ | *Python, Pandas, NumPy, Matplotlib, SciKit-Learn* *Jun 2023*
- Performed **feature engineering** to build a **supervised machine learning** model predicting Titanic survival with **81.5%** accuracy
- Executed the optimization of a RandomForest Classifier from **scikit-learn**, applying train-validation split to mitigate overfitting

League of Legends Champion Randomizer ⌗ | *Python, JavaScript, HTML, Flask, CSS, BeautifulSoup* *Jan 2023*
- Developed a full-stack web application using **Python**, **Flask**, and **CSS**, through rigorous web scraping enacting **BeautifulSoup4**
- Enabled the extraction of over **160** champion profiles, designing an agile **HTML** and **JavaScript** template for dynamic display

SKILLS

Languages: Python, C, C++, SQL, HTML, CSS, Java, JavaScript, Ruby, LaTeX, Racket
Frameworks/Libraries: Pandas, NumPy, Matplotlib, SciKit-Learn, TensorFlow, Keras, Flask, Node.js, Kedro
Tools: Azure, Visual Studio, Office, Git, Linux, Bash, Anaconda, Jupyter Notebook, Seaborn, Prophet, Apache NiFi, Grafana

LEADERSHIP

Founder | *Alina's Music Studio* *Mar 2019 – Jun 2022*
- Established a **start-up business** delivering professional piano and violin instruction, securing over **$51k** in operating revenue
- Facilitated excellence to over **80** students through tailored training, evidenced by prestige awards in competitions and exams

Concertmaster | *Lisgar Collegiate Institute Symphony Orchestra* *Sep 2018 – Jun 2022*
- Directed an ensemble of over **50** musicians, providing practical expertise on technical intricacies and expressive interpretation
- Initiated weekly stand-ups with the conductor and section heads to cultivate a unified artistic vision and cohesive performances

EDUCATION

University of Waterloo Waterloo, ON
Honours Bachelor of Computer Science, Minor in Combinatorics and Optimization *Sep 2022 – Apr 2026*
Coursework: Algorithm Design and Data Abstraction, Functional Program Designing
Clubs: Women in Computer Science, Computer Science Club, Data Science Club, Intramural Basketball

Interests: Piano, Basketball, Violin, Photography, Video Games, Stock Trading, Finance, Digital Art, Sneaker Collecting, Cooking