

BANG CHI DUONG

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SKILLS

- **Languages:** Python, JavaScript/TypeScript, C#, SQL, HTML5, CSS3, C/C++
- **Web Stack:** Node.js, Next.js, React, Flask, Oracle, MS SQL Server, MongoDB, Azure, AWS
- **Machine Learning (ML) & Other Stacks:** Git, Docker, Dataiku, UiPath, D3.js, Qlik, Jira

EXPERIENCE

- **Technical Safety BC** Vancouver, Canada
Data Scientist / Machine Learning Engineer Jul 2020 – Present
 - **Structured Resource Allocation Program:** Building and maintaining full-stack life-cycle ML projects in production, with appropriate MLOps practice, on workflow implementation, computation optimization, ML model training, business policy rule integration, production deployment, metrics and fairness monitoring with Qlik dashboard, in conjunction with business communication; Designing an architect for the transition from on-premise to hybrid-with-AWS infrastructure
 - **Web Services:** Architected and deployed into production a Next.js web application, together with a Flask REST API service, to communicate with client the statistics and SHAP explanations for batched predictions from ML models, which helps facilitate better understanding and reasoning for the ML results
 - **Robotic Process Automation (RPA):** Implemented and maintaining multiple RPA processes with UiPath for internal Client Experience and Engineering teams, saving more than 1000 hours per year on manual and repetitive tasks, and halving the response average turnaround time for external clients
 - **Innovation:** Communicating with stakeholders from different departments to explore potential ML and data-driven projects; eg. RPA, a POC on Natural Language Process (NLP) for Client Experience team, Retrieval Augmented Generation (RAG) on AWS, a web scraping program for Marketing team, and a Poisson process simulation for Incident Investigation team
- **Technical Safety BC** Vancouver, Canada
Data Science Co-op May 2019 – Aug 2019
 - **API Service:** Implemented a REST API service, including unit and integration tests, for the data science team to efficiently share data with other teams/departments
 - **Web Scraping:** Built web scrapers to gather public data on building permits from various sources
 - **PDF Information Extraction:** Accelerated team's data processing time by building a tool that extracts information from PDF files into CSV/JSON formats
 - **Financial Forecast:** Prototyped various time series models, from classical models to neural networks, to potentially improve operational expenditure planning
- **Ubisoft - La Forge** Montreal, Canada
AI Programmer Co-op Sep 2018 – Dec 2018

Optimized game developer and player experience by accelerating 3D interactive physics simulations with a 300 - 5000 times increase in speed

 - **Publication (Jul 2019):** DOI: <https://doi.org/10.1145/3309486.3340245>
 - **Data Acquisition:** Generated/Extracted a pool of interactive cloth and soft body data with Maya (nCloth)
 - **Deep Learning:** Extracted a compact subspace representation of (256/128/64) bases from ~10,000 dimensions using PCA, and trained neural networks entirely in the subspace to predict future motion trajectory
 - **Interactive Runtime Application:** Integrated the trained models into a C++ runtime application

PUBLICATIONS

- **Nature Communications** Feb 2021
 - **Paper:** Sachamitr, P., Ho, J.C., Ciamponi, F.E. et al. **PRMT5 inhibition disrupts splicing and stemness in glioblastoma.** Nat Commun 12, 979 (2021). DOI: <https://doi.org/10.1038/s41467-021-21204-5>
- **18th Annual ACM SIGGRAPH/Eurographics** Los Angeles, USA
- **Symposium on Computer Animation (SCA 2019)** Jul 2019
 - **Paper:** Daniel Holden, Bang Chi Duong, Sayantan Datta, and Derek Nowrouzezahrai. 2019. **Subspace neural physics: fast data-driven interactive simulation.** In Proceedings of the 18th annual ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA '19), Stephen N. Spencer (Ed.). ACM, New York, NY, USA, Article 6, 12 pages. DOI: <https://doi.org/10.1145/3309486.3340245>

CERTIFICATIONS

- **AWS Certified Machine Learning – Specialty (link)** *May 2023 – May 2026*
- **AWS Certified Solutions Architect – Associate (link)** *Feb 2023 – Feb 2026*

PROJECTS

- **Resource Utilization System** *Jan 2020 – Apr 2020*
 - Built a full-stack web application based on external client specs in an agile environment, with daily stand-up
 - Developed REST APIs with .NET Core MVC framework, and integrated with Microsoft SQL Server database
 - Integrated Azure Active Directory authentication and authorization, with OAuth 2.0 protocol
 - Integrated OpenAPI (Swagger) into the application for versioning and documentation purposes
 - Involved in bugs fixing for front-end development
 - Configured and managed a production-grade DevOps process involving continuous integration and continuous deployment (CI/CD) with GitHub and Azure DevOps, including automatic unit and integration testings
 - **Source code:** <https://github.com/duongch4/cs319>
 - **Technologies:** C#, .NET Core, React, Redux, Microsoft SQL Server, Azure, Azure Active Directory, Azure DevOps, OpenAPI
- **2D 2-Player Game: Capture the Castle** *Sep 2019 – Dec 2019*
 - Achieved first place in “Interaction and Control”, and awarded “Second Best Game” in the class
 - Developed an AI system for the movements of the soldier, bandit, and boss entities
 - Built a particle system for the hailing effect interacting with the on-screen characters
 - **Executable file:** <https://bangchi.tk/#projects>
 - **Source code:** https://github.com/duongch4/capture_the_castle
 - **Technologies:** C++, OpenGL
- **Data Visualization: The Disney Story** *Jan 2020 – Apr 2020*
 - Built a dynamic and interactive data visualization that was placed in the course Top 5 “Hall of Fame”
 - Processed the Academy Award data to get the award information for each of the movies and actors of interest
 - Built the dotplot view of the Disney movies broken down by year and Disney era including interactive tooltip
 - Created the legends for the dotplot and node-link graphs
 - Implemented the drag-and-drop functionality of the node-link graph
 - **Deployed website:** <https://duongch4.github.io/cs436-disney>
 - **Source code:** <https://github.com/duongch4/cs436-disney>
 - **Technologies:** JavaScript, D3.js, Python
- **Movie Review Web App** *May 20218 – Aug 2018*
 - Built a full-stack web application where users can get information on past and newly released movies, in terms of cast, plot, release date, etc., as well as posting their and reviewing other comments
 - Developed REST APIs with Node.js and Express framework, and integrated with MongoDB database
 - Involved in bugs fixing for front-end development
 - Configured a simple CI/CD pipeline with GitHub and Railway
 - **Deployed website:** <https://cs490-movie-review.up.railway.app>
 - **Source code:** <https://github.com/duongch4/cs490>
 - **Technologies:** Node.js, Express, MongoDB, React, Redux

EDUCATION

- **University of British Columbia** *Vancouver, Canada*
Bachelor of Computer Science (BCS); cGPA: 85.8/100.0 *Sep 2017 – Apr 2020*
- **University of Guelph** *Guelph, Canada*
Master of Bioinformatics; cGPA: 91.0/100.0 *Sep 2016 – Aug 2017*
- **University of Toronto** *Toronto, Canada*
Bachelor of Science (Hons) in Physics, Statistics and Chemistry; cGPA: 3.73/4.00 *Sep 2012 – Apr 2016*