

# Justin Du

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## Education

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University of Toronto, St. George

2023 - 2027

HBSc. Computer Science, Co-Op Program (ASIP) — GPA: 3.93 / 4.00 (Dean's List Scholar)

Toronto, ON

## Technical Skills

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**Languages:** Python, Java, JavaScript, Assembly, TypeScript, Bash, R, C/C++, HTML/CSS, MySQL

**Frameworks & Platforms:** React.js, React Native, Angular, Flask, Expo, Material UI, PyTest, JUnit

**Development Tools:** Atlassian JIRA + Confluence, Microsoft Azure, Google Firebase, Hugging Face, Git, Github, Vim

**Libraries & Misc.:** matplotlib, sklearn, pandas, transformers, opencv, pytorch, Maven, Linux

## Experience

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Machine Learning Developer

Sep. 2024 - present

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Toronto, ON

- Improved dataset labeling efficiency by **over 500%** by designing a **prompt engineering** workflow with **GPT models** via Azure AI Foundry, reducing costs for data preprocessing in model training.
- **Eliminated data collection costs** by synthesizing training data; tuned LLM hyperparameters to achieve text generation replicating the characteristics of existing data, expanding available assets to train classification models.
- Distilled probabilistic behaviour from LLMs into policy-conforming deterministic rule-based models.

## Projects

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**Stack: Course Multimedia Indexer** — 📄 *Github* — 🎨 *Figma*

May 2024 - present

- Outperformed SOTA models by **24%** for the *SPaSe* benchmark dataset with a Mask R-CNN model designed to segment presentation slide elements (e.g. title, links, text, diagrams).
- Designing **React Native** app with Expo that automatically compiles and indexes uploaded course multimedia, providing students with centralized and efficient topic lookup when studying.

**TapIt: NFC-Enabled Social Media Sharing (Hack the North 2024)** — 📄 *Github*

Sep 2024

- Implemented the **react-native-nfc-manager** library to write social media links to any Ndef-enabled NFC tag, as well as handle data read by the device.
- Brought an **Expo - React Native** app to production in under 32 hours, enabling users to load multiple custom profiles and write to an available NFC tag.

**Interrsect: LLM Notes Summarizer** — 🌐 *Website* — 📄 *Github*

Sep 2022 - May 2023

- Developed BART model based on **bart-large-cnn**, finetuned on **arxiv-summarization**, to generate improved study notes using aggregated work by students.
- Achieved a **ROUGE-2** score of **15.13**, expressing **strong shortform text generation**.
- Designed **React.js** end user interface hosted on Google Firebase, with data managed through **Firestore Database** and model connected via Hugging Face Inferencing.

**Heliios: Solar Panel Generation Forecaster** — 📄 *Github*

Sep 2020 - Apr 2022

- Trained a **K-neighbors regressor** from scratch to predict, using meteorological data, power generation of solar panels **anywhere in Canada**.
- Reduced the error margin of model predictions from **10%** to **<3%** through iterative **finetuning** process with **K-fold cross validation** using **GridSearchCV**.

## Awards

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Youth Science Canada

2021, 2023

2-time bronze medalist at the **Canada-Wide Science Fair**, placing in the top **0.1%** of projects in the country.