Hayden Choi

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Education

McMaster University Sep 2024 – May 2027
Honours Computer Science Co-op, Bachelor of Applied Science (GPA: 3.9/4.0) *Hamilton, ON*

Technical Skills

Languages: Python, JavaScript, Java, Ruby, C++, C, SQL
Libraries/Frameworks: Django, React, React Query, Node.js, Express.js, FastAPI
Databases/Cloud: Azure, AWS, MongoDB, Google Cloud Platform, Firebase, Render
Tools/Methodologies: Git, Docker, Linux, GraphQL, Cypress, Agile, Postman

Experience

Software Engineer Intern Dec 2025 – Present
Knockri *Toronto, ON*

- Architected an end-to-end **ReAct AI Agent** leveraging **IBM Watsonx Orchestrate** and **LLMs** for autonomous reasoning to reduce **83%** of total support tickets, cutting external support costs by **60%**
- Reduced transcription tool latency **74%** by resolving **N+1 GraphQL** queries and refactoring data-fetching architecture
- Developed a secure proctoring suite utlizing **Django** and **React** for **10k+ sessions** across **Fortune 500/Gov** clients
- Implemented a **Heartbeat API** via **GraphQL/UUID4** to restrict **7,000+** duplicate launches via backend locking
- Safeguarded production stability by writing **Cypress E2E** and **Django mock tests** for automated **CI/CD** regression

Software Engineer Intern May 2025 – Aug 2025
Brighter Signals BV *Markham, ON*

- Developed a **Real-Time Data Pipeline** to ingest sensor telemetry for **F1** wear detection, improving accuracy by **64%**
- Built **5+** specialized GUIs for investor demos that secured **$1.6M+** in funding for **MVP** development
- Optimized **4-axis Control Logic** by prioritizing event-driven signal polling to reduce real-time gesture latency by **35%**
- Shifted **Signal Pre-processing** to embedded firmware to automate filtering, reducing frontend compute load by **76%**
- Co-authored an **IROS 2025** paper and named a **Best Poster Finalist** for research on data-rich tactile sensors

Software Engineer Intern May 2024 – Sept 2024
Mana Immigration *Markham, ON*

- Architected **6+ Full-Stack** apps via **Flutter/Firebase**, utilizing a **Factory Pattern** for reusable UI components
- Boosted app responsiveness by **50%** by implementing **Deferred Loading** for complex navigation modules
- Engineered a **Discovery Engine** via **Spotify REST APIs** that bypassed algorithmic bias for genre-isolated playlists
- Migrated legacy **WordPress** infrastructure to **React.js**, refactoring monolithic pages into reusable components

Software Engineer Intern Jan 2024 – Apr 2024
Broadcast Fantasia *Markham, ON*

- Developed custom **Shopify** integrations via **Liquid** and **JavaScript** to extend core storefront functionality
- Leveraged **GraphQL** to execute optimized schema queries, improving data retrieval efficiency for product catalogs
- Performed end-to-end debugging via **Chrome DevTools** to resolve UI/UX regressions and cross-browser bottlenecks

Projects

SyllaScan | *React, Python, OpenAI, AWS, FastAPI, Google Calendar API*

- Developed an **NLP pipeline** using **FastAPI** to parse unstructured PDF syllabi into validated **JSON** schemas
- Utilized **Prompt Engineering** strategies to extract complex date-event pairs with high accuracy via **GPT-4**
- Integrated **Google OAuth 2.0** and **Calendar API** to automate bulk event synchronization for academic schedules
- Built a responsive **React** interface for real-time file uploads and interactive schedule previews before final sync

Twitter Clone | *MERN Stack, React Query, Cloudinary, Tailwind CSS, Render*

- Architected a scalable **MERN** social platform featuring complex follow systems and real-time notification streams
- Implemented **React Query** utilizing **Optimistic Updates** and API caching to minimize perceived frontend latency
- Integrated **Cloudinary API** for optimized image processing and secure storage of user avatars and media-rich posts
- Secured user sessions via **JWT** and **bcryptjs** with custom middleware-based route protection to ensure data privacy

Football Match Predictor | *Python, scikit-learn, Pandas, NumPy*

- Trained a **Random Forest** classifier achieving a **12% precision lift** over baseline models for match predictions
- Engineered **Rolling Average** features to capture team momentum and defensive strength across the last 3 fixtures
- Developed a **Pandas** preprocessing pipeline to encode categorical variables like venues and opponent strength
- Evaluated model reliability using **Precision and Recall** metrics to minimize false-positive win result classifications