




Alexander Sullivan

Full Stack Developer & Bioinformatician

✉ alexjsully.connect@outlook.com

alexjsully.me 



LinkedIn.com/in/alexanderjsullivan 



WORK EXPERIENCE

Full Stack Developer | Masterpiece X

Masterpiece Studio | Dec 2021 - Present

- **Developed and launched the Masterpiece X web application** which allows users to interact with a growing library of 3D models and assets available for the community to explore, use and remix (edit).
- Implemented a **generative AI tool** to allow users to **use text prompts to generate a 3D model with animations & rigs/bones via a web browser**.
- **Created user interface (UI) components and API endpoints** to enable **users to manage and interact with their assets** while in the Meta Quest app developed with Unity.
- Managed **CI/CD deployment** pipelines for production and internal/staging updates.
- Maintained the Masterpiece X **front end, back-end APIs, database** and **Firestore Functions** for **bugs, performance, optimizations** and user & QA reported feature requests and issues.
- Ensured **maintainable code** by implementing **test-driven environment** through **Cypress for UI and e2e testing, jest for unit testing**, Sentry for error tracking and formatting through prettier, lint & ESLint.
- Implemented & monitored **analytic metrics** (using Google Analytics & Google Tag Manager) to track and understand how a user interacts with the Masterpiece X app.
- Engineered the **user account systems** (from **front-end, to back-end API endpoints, to database**) enabling management of account public and private 3D assets, account details and metrics.
- Built **React & Next.js UI components and NestJS REST API endpoints** (with respective **Firestore Storage, an ORM PostgreSQL & Firestore database changes**) and **managed third-party services** across the Masterpiece X community library, user storage system, generative AI tool, account management and admin/internal systems. Primarily using **TypeScript/JavaScript**.
- Engineered a **responsive web design** with a customer centric design for **mobile, desktop, tablet**, and VR browsers while ensuring **compatibility for users with accessibility requirements**.

Data Visualization Programmer & Bioinformatician | eFP-Seq Browser & GAIA

University of Toronto | Sep 2016 - Dec 2021

- Contracted to **develop and launch multiple bioinformatic web tools** and applications with Professor Nicholas Provar and his BAR (Bio-Analytic Resource) lab.
- eFP-Seq Browser | **Data Visualization Programmer**
 - **Developed the eFP-Seq Browser, a web tool to visualize gene expression levels** across different expression datasets **for RNA-Seq experimental data**.
 - Developed **UI features** (using JavaScript with Bootstrap & jQuery) for **visualizing RNA-Seq experimental data** provided as BAM/SAM files (self-hosted on **AWS S3** or Google Drive) with **Python back-end web services** and a **MySQL** database.
 - Implemented an **account system** to manage and store their uploaded experimental data.
 - **Ensure the reliability of the statistical outputs** for the RNA-Seq analysis using **both Pearson Correlation Coefficient and point-biserial correction coefficient** in R.
 - Published in an open-access paper, The Plant Journal, as a first-authored peer-reviewed scientific publication with over 26 citations & zero being contrasting statements. Code is now open-source.



WORK EXPERIENCE (...CONTINUED)

Data Visualization Programmer & Bioinformatician | eFP-Seq Browser & GAIA

University of Toronto | Sep 2016 - Dec 2021

- GAIA (General Agricultural Intelligent Agent) | **Bioinformatician**
 - Designed and developed **GAIA, a web tool to aggregate and synthesize general agricultural biological information to centralize data** searching while **enabling users to ask broad questions.**
 - **Developed** (using JavaScript & React) and **designed** (using Adobe XD) **front-end UI/UX & back-end Python web services** as well as Node.js **data-processing scripts** on **both a MySQL** and a **MongoDB** database.
 - Developed a **statistical natural language processing (NLP)** to answer broad questions by creating an **in-house machine reading (MR) logic.**
 - Collaborated with a **machine learning (ML) research lab** to create a **machine vision AI tool** (using GCP Vision API) to **recognize and read biological pathways in figures & image** to be searchable within GAIA.
 - **Led and mentored a cross-functional team** to successfully deliver GAIA's features within specified deadlines through **agile methodology** and iterative design & development.

Unity Software Engineer | VirtEx Labs

University of Toronto | Aug 2017 - Sep 2018

- Contracted to research and **developed a virtual reality (VR) pedagogical prototype to teach basic scientific laboratory techniques** with the biomedical engineering department.
- Spearheaded the development and creative aspects of this prototype, utilizing **C# within the Unity 3D game engine**, crafting **custom 3D assets in Blender**, collaborating with teaching laboratories to simulate fundamental techniques, and addressed bug fixes & optimizations.
- Ensured the prototype **VR educational game** is usable from high-end devices like the HTC Vive to lower end devices like phone VR using Google Cardboard SDK.



EDUCATION

Master of Science (MSc) - Bioinformatics | University of Toronto | Sep 2018 - Nov 2021

Bachelor of Science (BSc) - Biotechnology | University of Toronto | Sep 2013 - June 2018

</> PROGRAMMING LANGUAGES

TypeScript/JavaScript	HTML/HTML5 & CSS/CSS3/SCSS	SQL (MySQL & PostgreSQL)
NoSQL (MongoDB)	Python	Git & Bash
R	C#	YML/YAML
XML & JSON	Visual Basic	



FRAMEWORKS AND TOOLS

Next.js & React/ReactJS	Material-UI & Bootstrap	CI/CD w/ GitLab & GitHub Actions
Amazon Web Services (AWS)	Google Cloud Platform (GCP)	Google Firebase
Google Analytics & GTM	Auth0 & Google Identity	Sentry
Unity 3D game engine	Android & adb	Algolia
Figma & Miro & Adobe XD	Cypress & Jest (testing)	prettier & lint & ESLint (clean code)
jQuery & jQuery UI	D3.js	Three.js & Google Model Viewer
Linux (Debian & Ubuntu w/ WSL)	Vercel & Cloudflare & Namecheap	Node.js
NestJS	Canva & Inkscape	Microsoft Office & Google Workspace
Progressive Web Application (PWA)	Blender & Autodesk Meshmixer	Postman