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## </> PROGRAMMING LANGUAGES

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

## ⚙️ FRAMEWORKS AND TOOLS

Next.js & React  
Material-UI & Bootstrap  
CI/CD w/ GitLab & GitHub Actions  
Amazon Web Services (AWS)  
Google Cloud Platform (GCP)  
Google Firebase  
Google Analytics & GTM  
Sentry  
Auth0 & Google Identity  
Unity 3D (game engine)  
Android & adb  
Algolia  
Figma & Miro & Adobe XD  
Cypress & Jest (testing)  
jQuery & jQuery UI  
D3.js  
Node.js  
Linux (Debian & Ubuntu/WSL)  
Vercel & Cloudflare & Namecheap

# Alexander Sullivan

Full Stack Developer & Bioinformatician with 7+ years of experience



## WORK EXPERIENCE

### Full Stack Developer | Masterpiece X

Masterpiece Studio | Permanent Full-time | Dec 2021 - Present

- **Developed 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 via a web browser**.
- **Created an interface 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 updates.
- Maintained the Masterpiece X **front end, back-end APIs, database** and **Firebase Functions** for **bugs, performance, optimizations** and user & QA reported feature requests and issues.
- Managed & monitored **analytic metrics** to be used to track and understand how a user interacts with the Masterpiece X app.
- Engineered & managed **user account systems** (from **front-end, to API endpoints and database**) enabling management of account public and private 3D assets, account details and deletion.
- **Built UI features & REST API** endpoints (with respective **PostgreSQL database changes**) and **managed third-party services** across the Masterpiece X community library, user storage system, generative AI tool, account management and admin systems.
- Ensured **responsive web design** on **mobile, desktop, tablet**, VR browsers and a custom in-app viewport while ensuring **compatibility for users with accessibility requirements**.

### Web Developer & Bioinformatician | eFP-Seq Browser & GAIA

University of Toronto | Contract part-time | Sep 2016 - Dec 2021

- **Developed multiple bioinformatic web tools** and applications with Professor Nicholas Provart 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 data from RNA-Seq experimental data.**
  - **Developed UI features** for visualizing RNA-Seq experimental data.
  - Implemented an **account system** to store and manage uploaded data.
  - **Ensure the reliability of 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**.



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## PERSONAL PROJECTS

### Impact Depth | May 2021 - Jan 2023

- Visualize citation flows of a publication of interest and use an interactive tree to understand what scientific fields that publication impacted.
- Created using D3.js & React, custom data scrapping and processing scripts, database on MongoDB, hosted using Firebase.

### Small Dev Talk | Mar 2013 - Apr 2016

- Created a blog website that wrote interview and news articles about projects and games in the indie community.



## TEACHING

### Teaching Assistant

University of Toronto | Jan 2019 - Aug 2021

- TA for CSB352: Bioinformatic Methods & BIO130: Molecular & Cell Biology

### Academic Tutor

Mai Tutor | Sep 2012 - May 2013

- Tutor students from grade 1 through grade 11

# Alexander Sullivan



## WORK EXPERIENCE (...CONTINUED)

### Web Developer & Bioinformatician | eFP-Seq Browser & GAIA

University of Toronto | Contract par-time | Sep 2016 - Dec 2021

- GAIA (General Agricultural Intelligent Agent) | **Project Lead**
  - Designed and **developed GAIA, a web tool to aggregate and synthesize general agricultural biological information to centralize** data search while **enabling users to ask broad questions.**
  - Organized and **managed a team of programmers and bioinformaticians** to ensure GAIA's features were **delivered by the expected deadlines** through iterative & **agile development.**
  - **Developed** and designed **front-end UI features & back-end Python webservices** as well as **data-processing scripts.**
  - 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 research lab** to create a **machine vision tool** (using GCP Vision API) to **recognize and read biological pathways in figures & image** to be searchable within GAIA.

### Unity Software Engineer | VirtEx Labs

University of Toronto | Contract part-time | Aug 2017 - Sep 2018

- Researched and **developed a virtual reality (VR) pedagogical prototype to teach basic scientific laboratory techniques.**
- Was the sole developer on this prototype and was responsible for programming in **C# in Unity 3D game engine**, creating **custom 3D assets using Blender**, working with teaching laboratories to replicate basic techniques, as well as handle bug fixes and optimizations.
- Ensured the prototype **VR educational game** was **usable from high-end devices** like the HTC Vive **to lower end devices like phone** VR using Google Cardboard SDK.
- Was awarded the NVIDIA Academic GPU Grand Program.



## EDUCATION

### Master of Science (MSc) - Bioinformatics

University of Toronto | Aug 2018 - Nov 2021

### Bachelor of Science (BSc) - Biotechnology

University of Toronto | Sep 2013 - June 2018



## PUBLICATIONS

### ePlant in 2021: New Species, Viewers, Data Sets, and Widgets

Preprint (bioRxiv) | Apr 2021 | doi 10.1101/2021.04.28.441805

### An 'eFP-Seq Browser' for visualizing and exploring RNA sequencing data

The Plant Journal | Jul 2019 | doi 10.1111/tpj.14468