Salim Mansour

Research Methods Specialist · Software Engineering

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Work Experience

Centre for Addiction and Mental Health

Research Methods Specialist *March 2023 - present*

- Led data management and pipeline development on a **transcranial magnetic stimulation (TMS) study**, implementing an sgACC targeting pipeline to reliably generating personalised targets for treatment using MRI data within a three-day turnaround **on a weekly basis for a year.**
- Trained several new research analysts on becoming skilled members of the lab, writing clear and concise documentation on topics such as running pipelines locally with **Docker** and **Singularity containers** or submitting to our available **high-performance Linux computing clusters** such as **SciNet** to effectively run data for hundreds of MRI scans in parallel via **Slurm** scripts.

Research Analyst *May 2020 - Feburary 2022*

- Optimized and ran imaging preprocessing pipelines and data flow for a high-tech lab, efficiently preparing outputs from notable BIDS apps **fmriprep, ciftify, qsiprep** for several large studies investigating mental health totalling **over 2000 participants.**
- Developed modules for impactful neuroimaging preprocessing pipelines on **GitHub** including **QSIprep** using **Python**, and created new tractography pipeline **tractify** to produce accurate and elegant white matter tract diagrams for large datasets in parallel **in 15 minutes.**

Geosoft Inc.

Automated Test Engineer *January 2018 - August 2018*

- Tested main product Oasis montaj through Ranorex by managing over 1000 tests for each release and reporting results, decreasing the **average failure rate for builds by 20%**.
- Presented results in weekly meetings, communicating with coworkers in other departments to update and boost understanding of **automated testing**.

Education

University of Toronto

HBSc Specialist in Software Engineering *September 2016 - April 2020*

- Studied Algorithm Design and Analysis, Operating Systems, Computer Graphics, Artificial Intelligence, and Machine Learning.
- Awards: Dean's List 2016-2020, UofT Entrance Scolarship.

Projects

Neuorimaging sgACC Targeting

Neuroimaging, Centre for Addiction and Mental Health (Python, Nextflow) *May 2022 - September 2022*

- Implemented cluster algorithm that generates personalised sgACC targets for use in depression TMS studies, using new workflow framework tech **Nextflow** to develop a targeting pipeline with **visual QC outputs** to run on a dataset of **a hundred sessions in parallel in under 20 minutes.**

Tractify

Neuroimaging, Centre for Addiction and Mental Health (Python) *May 2019 - April 2022*

- Designed and built an efficient tractography generation pipeline using **software design principles** to greatly decrease runtime and provide increased functionality for unique use cases, and containerized it using **Docker** and **Singularity** for increased accessibility and reproducibility.

Ray Tracer

Computer Graphics, University of Toronto (C) *September 2019 - December 2019*

- Used **C** to quickly produce photorealistic scenes, combining **linear algebra, physics, and programming** concepts to implement advanced features including **multithreading, texture mapping, anti-aliasing, depth of field, and refraction**.

Skills

Programming	C#, C++, C, Python, Java, R, HTML, Matlab, SQL
Workflow Frameworks	Nipype, Nextflow
Containerization	Docker, Singularity
Project Management	Github, Jira, Confluence