

# Joon Hwan Hong

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## EDUCATION

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B.Sc. Major Computer Science and Biology, Minor Neuroscience	2018-Present: McGill University
· 3 <sup>rd</sup> Year cGPA <b>3.73/4.00</b>	

## RESEARCH

### Defining Local Cortical Arousals During Sleep Using the MNI iEEG Atlas:

*Epilepsy Group: Lab for Analytical Neurophysiology (Sep 2020 – Present)*

- Integrate a deep learning polysomnography multimodal-arousal-detector to process iEEG data.
- Classify and investigate the distinct participation of cortical regions in local regulation of arousal.

### Targeted Fluorescence-Assisted Nuclei Sorting from Post-mortem Human Brain:

*McGill Group for Suicide Studies (Sep 2019 – April 2020)*

- Develop and optimize protocol for nuclei sorting from post-mortem human tissue.
- DNA quantification, RNA extraction, cDNA synthesis, antibody staining, ISH, and qPCR.
- Use DNA methylation measurement from sorted nuclei to investigate molecular changes in depressed individuals. 12h/week research-for-credit.

### Expression of Hypoxia-Inducible Factor-1 in HEK-293 Cells:

*Seoul National University College of Medicine (June – August 2019)*

- Acquire gene expression levels via Western blot analysis on Widr & HEK-293 cancer subcultures.
- Paid full time 09:00-18:00 summer internship program.

## PROJECTS

### Experiment Analysis Automation Project: Automatic analysis & report generation GUI

- Determine DNA concentration from Picogreen protocol of 96 individual recordings.
- Using a JavaFX frontend and python backend, generate report containing all information & processed data with visualizations.

### R Neuroimaging Project: NiftI and DICOM image processing

- Binary masking, backmapping, bias field correction, and linear transformation of MRI images in NiftI and DICOM format. Process and generate visualizations.

### Implement-AI Project: Computational Vision Gesture-based keyboard

- Develop pose detection using the Skeletal computational vision model from WnchAI SDK.
- Linearize vectors from joint positions, assign to a position and key input.

## SKILLS

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- **MATLAB, Python, Java, JavaFX, R, HTML**
  - Bilingual in English and Korean

## CLUBS & ACTIVITIES

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- CSUS CS/Biology Representative
  - McGill Association for Collaborative Mental Healthcare member
  - Redpath Museum Volunteer