Joshua Hyung-Woo Chung

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Technical Skills

Languages: Python, SQL, R, JavaScript, HTML/CSS, C/C++
Technologies: ArcGIS Pro, ArcGIS Online, FME, QGIS, Power BI, Microsoft Azure, Jupyter, Git
Libraries: GDAL, OGR, Geopandas, Shapely, Pandas, Rasterio, ArcPy, NumPy, Matplotlib

Work Experience

GIS Engineer Jul. 2022 – Present
GeoMate *Kitchener, ON*

- Utilized **GeoPandas**, **Shapely**, and **QGIS** to modify a post-processing pipeline responsible for bridging lane marker data from five metropolitan cities, improving accuracy of connectivity by **20%.**
- Developed an innovative automation script integrating AI-generated road attribute data with OpenStreetMap to create polygons, delineating uniform road rule areas for optimizing autonomous vehicle route planning.
- Used **NearMap's Tile API** to develop an automated, multi-threaded web-scraping tool that downloads high-resolution imagery and converts it to unique image file formats.
- Led a project with a team of engineers and clients from the Town of Oakville to refine inaccurate bike lane and signage vector data.

ML Engineer Sept. 2021 – Dec. 2021
Arthur Health Corporation *Toronto, ON*

- Utilized **Python** and **Microsoft Azure ML Studio** to forecast the probability of injured workers returning to work using patient data.
- Implemented **XGBoostClassifier** techniques with SMOTE, hyperparameter tuning, and Stratified K-Fold Cross-Validation, resulting in a 10% increase in model accuracy.
- Responsible for creation of major dashboards in PowerBI through the usage of DAX calculations and SQL queries in SSMS.

Geomatics Analyst Jan. 2021 – Apr. 2021
Agriculture and Agri-Food Canada *Ottawa, ON*

- Contributed to the Joint Experiment for Crop Assessment and Monitoring (JECAM) project via Full-Stack Development on the main website.
- Accelerated polygon digitization process of agricultural land in four major provinces using a **supervised random-forest classification model**, **Google Earth Engine**, and the **ArcGIS Desktop Suite**.

GIS Research Assistant Sept. 2019 – Dec. 2019
CanmetENERGY-Ottawa *Ottawa, ON*

- Conducted a suitability assessment of Canada's offshore wind energy resources using **ArcGIS Desktop Suite**.
- Manipulated nautical map charts to extract specific features deemed significant to the project using **ArcMap**.
- Utilized Geopandas library in Python to generate grid point coordinates for downloading ECCC Wind Speed Data within daily download limits.

Projects

Kitchener/Waterloo Urban LULC Change Prediction | *ArcGIS Pro, TerrSet* Jan. 2022 – Apr. 2022

- Conducted a remote sensing study to predict urban landcover change in Kitchener/Waterloo region using ML methods and influential variables such as transit routes, water bodies, and slope gradient.

Canadian Prairie Crop Yield Forecast | *Python, Tensorflow* May. 2021 – Jul. 2021

- Developed an ML model to produce early forecasts on spring wheat production in the Canadian Prairies using climate and remote sensing-derived indices from Agriculture and Agri-Food Canada's Spring Wheat Time Series Dataset.
- Implemented XGBoost regression algorithm with yearly cross-validation and hyperparameter tuning using HyperOpt, improving existing forecasting accuracy by 5%.

Education

University of Waterloo | Honours Geomatics, Co-op Waterloo, ON
Bachelor of Environmental Studies, Minor in Computer Science *September 2017 – April 2022*

- Cumulative Major Average: 3.70/4.00 | High Distinction
- Relevant Coursework: GIS & Spatial Analysis, Remote Sensing, Data Structures & Algorithms, Machine Learning