

# SEA RAN CLEON LIEW

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## EDUCATION

### University of Waterloo Bachelor of Mathematics

Waterloo, ON  
Sep 2020 – Jun 2024

Major in Computational Mathematics; Minor in Computing

Cumulative GPA: 85/100; Graduated with Distinction

Relevant Coursework: Designing Functional Programs; Elementary Algorithm Design and Data Abstraction; Data Types & Structures; Computational Statistics and Data Analysis; Neural Networks; Data Visualization

## WORK EXPERIENCE

### AI and Data Science Research Assistant University of Waterloo

Waterloo, ON  
May 2023 – Apr 2024

#### FHIR Data Encoding Project under Prof. Bryan Tripp

- Implemented data encoding methods, including Spatial Semantic Pointers and Sinusoidal Encoding, to improve the input representation of FHIR-formatted data, enabling more efficient processing by the subsequent transformer model.
- Employed SQL to cleanse, normalize, and structure FHIR-formatted datasets, optimizing them for model input.

#### Metastatic Cancer Imaging Project under Prof. Subha Kalyanamoorthy

- Developed deep learning programs for nerve cell image processing utilizing PyTorch, achieving 78.28% accuracy.
- Optimized models including SVM, Vision Transformer, and Autoencoder through cross-validation and hyperparameter tuning, using NumPy and Pandas for data handling and employing R (ggplot2) and Matplotlib for performance visualizations.
- Trained models on Compute Canada's High-Performance Computing (HPC) clusters, managing jobs with Bash scripting.

### Deep Packet Inspection Automated Quality Assurance Intern Nokia

Ottawa, ON  
Sep 2022 – Dec 2022

- Automated traffic detection testing for over 20 applications (Web, Android, iOS) using Python, Selenium, and Appium.
- Tested 60+ application filters to ensure accurate network traffic capture and correct Quality of Service policies application.
- Scheduled test executions via Linux Crontab and used Wireshark to inspect packets and troubleshoot traffic detection issues.

### Data Quality Assurance Intern Ontopical

Calgary, AB (Remote in Toronto, ON)  
Jan 2022 - Apr 2022

- Developed over 50 web scrapers using Scrapy, Splash, and Lua to aid the ETL process for multimedia data aggregation.
- Monitored and tested web scrapers in AWS Batch, utilizing AWS CloudWatch and Power BI for performance dashboards.
- Leveraged Git, Bitbucket, Jira, and Confluence for version control and task management within an Agile Scrum framework.

### Assurance Practice Intern PricewaterhouseCoopers

Hong Kong  
May 2021 - Aug 2021

- Conducted detail testing and control testing with PwC's auditing software Aura.
- Analyzed financial statements with Excel (VBA and Macros), identifying trends and fluctuations to inform audit conclusions.

## SKILLS

**Programming Languages:** Python, R, SQL, C, Java, Bash, Lua, HTML, CSS

**AI and Data Science:** scikit-learn, Keras, PyTorch, TensorFlow, Cuda, Hugging Face, NumPy, Pandas, MATLAB

**Data Analysis and Visualization:** Matplotlib, Power BI, Tableau, Excel (VBA, Macros), LaTeX

**Web Scraping and Automation:** BeautifulSoup, Scrapy, Splash, Selenium, Appium

**Cloud and Collaboration Tools:** Git, Bitbucket, Jira, Confluence, AWS Batch, AWS CloudWatch, Jupyter Notebook

**System Administration and Networking:** Linux, Crontab, PuTTY, MobaXterm, Wireshark

## PUBLICATIONS

### Use Of Subword Tokenization For Domain Generation Algorithm Classification

*Cybersecurity* 6, 49 (2023). (<https://cybersecurity.springeropen.com/articles/10.1186/s42400-023-00183-8>)

- Integrated scheme consisting of subword-based models for better classification of domains generated by various DGAs.

### Beam - An Algorithm For Detecting Phishing Link

2022 APSIPA Annual Summit and Conference, pp. 598-604. (<https://ieeexplore.ieee.org/document/9979860>)

- Developed an attention-based phishing detector by performing sub-word tokenization and fine-tuning the NLP model BERT.