SERGIU MOCANU

SOFTWARE ENGINEER

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Toronto, ON
sergiu-mocanu
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EDUCATION

Ryerson University Sept. 2017 to Jan. 2020
M.A.Sc. Biomedical Engineering 2020

Ryerson University Sept. 2013 to June 2017
B.Eng. Biomedical Engineering 2017

Dalhousie University Sept. 2007 to June 2012
B.Sc. Psychology 2012

SUMMARY

I am a software engineer working at SickKids hospital in Toronto. I have worked with Machine Learning and Deep Learning Models in Python and R programming languages. My responsibility is to take command-line bash applications and transform them into a web application. I have done this by employing Shiny, with the use of Docker containers, and packaging the application into an R package.

I have recently graduated with an Master of Applied Science in Biomedical Engineering from Ryerson University. My research focus was on medical image analysis using a mix of computer vision skills and deep learning. I have implemented several well-known deep learning architectures in Keras using Tensorflow including: UNet, FlowNet, ResNet, and DenseNet to name a few. I am very fascinated by the latest research in medical imaging and always keep updated by reading the newest research papers on the topic. The title of my thesis is: *Optical Flow-Based Image Registration in FLAIR MRI*.

Along with image processing research, I worked as a teaching and laboratory assistant for several 3rd and 4th year undergraduate engineering courses that encompass signal processing and image analysis. I have analyzed various physiological signals at a student and educator level and use Python, MATLAB, and R in my day-to-day work and research. My goal is to obtain a career in the machine learning industry working on the latest research in signal and image processing.

SKILLS

SOFTWARE: Python, Keras, Tensorflow, Deep Learning, Matlab, Image Processing, Signal Processing, Microsoft Office, Android, Java, R, ITK, FreeSurfer, FSL, Git, Registration, Segmentation, Classification, GAN, Active Contour, B-Spline Snakes, FFT, Javascript, HTML, CSS, Shiny, Django, Flask, C++, C, C#, .NET, React, AWS
INTERPERSONAL: Organized, Reliable, Collaborative, Leader, Approachable, Communication, Multi-Tasker, Listener, Research-Writing, Editing

EMPLOYMENT

THE HOSPITAL FOR SICK CHILDREN — Toronto, ON
Software Engineer — Feb. 2020 to Current
Deploying machine learning models as web applications. Tested various deep learning models used for time-series and classification of signals. Used Docker to containerize web applications for sharing and testing. Github used for version control. Designed laboratory website in Wordpress. Use MATLAB for data processing.

RYERSON UNIVERSITY — Toronto, ON
Teaching Assistant — Sept. 2017 to May 2020
Taught signal analysis course laboratories with a focus on biomedical 1-dimensional signals. Courses: Signals I, Signals II, Biomedical Signal Analysis, Medical Image Analysis. A major focus of the position was on computer vision and image analysis.

RYERSON UNIVERSITY — Toronto, ON
Research Assistant — Sept. 2017 to Jan. 2020
Medical imaging related research using computer vision algorithms along with Deep Learning using Tensorflow. Used MATLAB for data processing, signal analysis, and image processing algorithms.

PROJECTS

OPTICAL FLOW - BASED IMAGE REGISTRATION — Sept. 2017 to Current
Adapted a deep learning optical flow network used in computer vision for medical image analysis by adding an additional loss component and hyper-parameter tuning. The model was trained and tested on 4000 medical volumes (250,000 images) with high accuracy measured via several intensity metrics.

RECONSTRUCTIVE SURGICAL ASSISTANT - CAPSTONE PROJECT — Sept. 2016 to May 2017
Created an Android application on the Project Tango device that uses Infrared point-clouds to map the external anatomy of a human face and measure symmetry using MATLAB.

RESEARCH ASSISTANT — May 2017 to Sept. 2017
Developed a GUI image processing application for 3D segmentation of fetal MRI using b-spline snakes active contour in MATLAB at SickKids Hospital.

RESEARCH ASSISTANT — May 2016 to Oct. 2016
Created a high-powered device for monitoring glucose levels using near-Infrared spectroscopy and analyzed the data in MATLAB.

AWARDS

Ryerson University · GRADUATE FELLOWSHIP — Sept. 2017
Entrance scholarship for the MASc program.

Ryerson University · NORMAN ESCH - STAGE 1 — June 2017
Our team won the Stage 1 Engineering Entrepreneurship award for designing the Reconstructive Surgical Assistant - Capstone Project.

ACTIVITIES

JOURNAL CLUB - IAMLAB · Founder/Organizer
Organized a journal club for our research lab to present new and relevant papers on medical image analysis.

AIMED RADIOLOGY - CHICAGO IL · Workshop Presenter
Presented a workshop on AI and Deep Learning to Radiologists along with my supervisor.