viet nguyen

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education

bsc | h. prob & stats, min cs
mcgill university | 2018-2021

- interests: reinforcement learning, learning theory, optimal transport, neuroevolutionary algorithms
- expected year of graduation: 2021

teaching

université de montréal fall 2020

- teaching assistant, Foundations of machine learning (3395/6390), prof. Rabusseau, prof. Mitliagkas

courses

graduate courses
advanced real analysis 2
applied machine learning
topics (cs): maths of machine learning
topics (math): concentration phenomena

related courses
h. probability
h. statistics
h. algorithms & data structs

skills

langs
experienced
python • java • C • bash
proficient
UNIX • R • OCaml • MATLAB

ml/ai
frameworks, libraries
pytorch • gym • bsuite • tensorflow • scikit-learn
keras • opencv • pandas • numpy
platforms
slurm • gcp • aws • watson • dialogflow

general
comm
english • french • vietnamese
os
linux • mac

research

mcgill - prof. doina precup | research
summer 2020 - present

- researched with prof. Precup on deep exploration in reinforcement learning, in particular, provably-efficient information-directed sampling for linear MDPs, deriving high-probability regret bounds
- develop and maintain a deep reinforcement learning api written in pytorch for quick and easy algorithm prototyping, testing, and interpretation

mcgill - prof. abbas khalili | research project
winter 2020

- researched with prof. Khalili on the behavior of neural networks under gradient descent from the perspective of gradient flow in the space of measures w/ the Kantorovich (Wasserstein) metric, in particular the landscape geometry of the optimization objective
- employed various concentration inequalities, functional analysis, and propagation of chaos type arguments to prove convergence of stochastic gradient descent to a limiting PDE

inrs - prof. long le - necphylab | research
summer-fall 2019

- researched with prof. Le in his CSI project, built, reproduced, and improved frontier models in domain-independent joint activity/localization using channel-state information from WIFI Tx/Rx
- **proposed** and explored deep regressive models to build a novel continuous human localization algorithm in a controlled setting
- applied various image processing algorithms, including CMU's Openpose, to produce labeled data for localization regression
- applied signal processing, time series analysis for data understanding, feature engineering, feature selection, and dimensionality reduction

projects, experiences

mcgill - prof. prakash panangaden | term paper, presentation
fall 2019

- researched continuous neural networks: formulation and equivalence to regular neural networks
- studied convergence to Gaussian processes in the infinite width limit, gradient flow in function space w.r.t. the Neural Tangent Kernel (NTK), and universal approximation of operators and functionals by function machines
- proved universal approximation of functional continuous neural networks
- **delivered presentation at the Seminary on Undergraduate Mathematics in Montreal (SUMM)**

self-driving wheelchair | neurotechx 2019 - mcgill | ml team
winter 2019

- researched state-of-the-art models and feature construction pipelines in classification of motor imagery signals
- used numpy, scipy, matplotlib, seaborn for the analysis and interpretation of EEG time series signals and spectrograms of frequency distributions over time
- re-implemented milestone works from the literature in PyTorch, ran benchmarks on different EEG datasets, both simulated and real
- **placed First in the NeurotechX Competition, 2019**