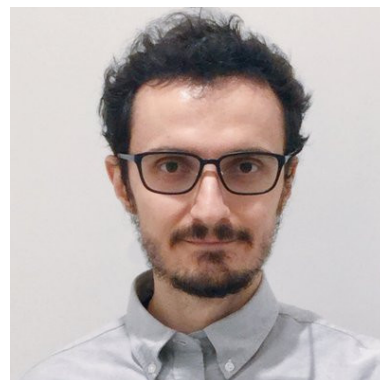


Ilija Ilievski

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ABOUT

Ilija is a machine learning researcher building holistic models of unstructured data from multiple modalities. His diverse, six-year experience as a machine learning researcher includes projects on combining satellite images and census data for complex city models, utilizing movie metadata and watch statistics for recommender systems, and fusing image and text data representations for visual question answering. Currently Ilija is working on developing a unified model of financial data coming from multiple sources applied to portfolio optimization.



RESEARCH EXPERIENCE

Time Series Forecasting with Deep Learning Sep 2017 – Present
Using deep learning we discover the predictive power of one financial time series, such as liquidity, in forecasting another financial time series, such as volatility.
Supervisor: A-Prof. Ying Chen, Dep. of Statistics & Applied Probability, NUS

Image Question Answering Nov 2015 – Present
A unified deep learning model of image and text data applied to VQA, [1,2,3,5].
Supervisor: Dr. Jiashi Feng, Dep. of Electrical and Computer Engineering, NUS

Non-Convex Optimization in High Dimensions Nov 2015 – Sep 2016
An algorithm for non-convex, gradient-free optimization in up to 20 dimensions, [4,6,8].
Supervisors: Prof. Christine A. Shoemaker and Dr. Jiashi Feng, ISE & ECE, NUS

Discourse Relation Extraction Nov 2014 – Nov 2015
Discovering structure and extracting relations in news articles, [7].
Supervisors: Prof. Min-Yen Kan and Prof. Hwee Tou Ng, School of Computing, NUS

Metadata Information Extraction Jun 2013 – Sep 2013
Extracting movie metadata from text descriptions and user watch statistics, [10].
Supervisor: Dr. Sujoy Roy, Institute for Infocomm Research, A*STAR

Modelling Users, Societies, & Environments Nov 2011 – Jun 2013
Machine learning GUI tool for modeling and simulation of urban development, [9,11,12].
Supervisor: Prof. Sonja Gievska, Faculty of Computer Science and Engineering, UKIM

EDUCATION

Ph.D., Deep Learning, National University of Singapore, Singapore
Representation Learning of Data with Multiple Modalities Aug 2014 – Aug 2018 (*exp.*)
Adviser: Dr. Jiashi Feng

M.Eng., Software Engineering for Machine Learning, UKIM, Macedonia
Intelligent Tool for Modeling and Simulation of Urban Development Nov 2011 – Mar 2014
Adviser: Prof. Sonja Gievska

B.Sc., Computer Engineering, Ss. Cyril and Methodius University, Macedonia
Algorithm for Clustering News Articles Sep 2006 – Mar 2011
Adviser: Prof. Andrea Kulakov

PUBLICATIONS

- [1] [Ilievski I.](#) and Feng J., “**Multimodal Learning and Reasoning for Visual Question Answering**”, *Neural Information Processing Systems (NIPS)*, Dec 2017.
- [2] [Ilievski I.](#) and Feng J., “**Generative Attention Model with Adversarial Self-learning for Visual Question Answering**”, *Association for Computing Machinery (ACM) Multimedia Understanding*, Oct 2017.
- [3] [Ilievski I.](#) and Feng J., “**A Simple Loss Function for Improving the Convergence and Accuracy of Visual Question Answering Models**”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), VQA workshop*, Jul 2017.
- [4] [Ilievski I.](#), Akhtar T., Feng J. and Shoemaker C., “**Efficient Hyperparameter Optimization of Deep Learning Algorithms Using Deterministic RBF Surrogates**”, *Association for the Advancement of Artificial Intelligence (AAAI)*, Feb 2017.
- [5] [Ilievski I.](#), Yan S. and Feng J., “**A Focused Dynamic Attention Model for Visual Question Answering**”, *under submission to IEEE Transactions of Multimedia (TMM)*, Feb 2018.
- [6] Fu J., Ng R., Liu Y., Chen D., [Ilievski I.](#), Pal C., and Chua T., “**Neural Optimizers with Hypergradients for Tuning Parameter-Wise Learning Rates**”, *International Conference on Machine Learning (ICML), AutoML workshop*, Aug 2017.
- [7] Lei W., Wang X., Liu M., [Ilievski I.](#), and Kan M., “**SWIM: A Simple Word Interaction Model for Implicit Discourse Relation Recognition**”, *International Joint Conference on Artificial Intelligence (IJCAI)*, Aug 2017.
- [8] [Ilievski I.](#) and Feng J., “**Hyperparameter Transfer Learning through Surrogate Alignment for Efficient Deep Neural Network Training**”, *Pre-print arXiv:1608.00218*, Aug 2016.
- [9] [Ilievski I.](#), “**Tool for Modelling and Simulation of Urban Development**”, *Master Thesis, Ss. Cyril and Methodius University*, Mar 2014.
- [10] [Ilievski I.](#), and Roy S. “**Personalized News Recommendation Based on Implicit Feedback**”, *Association for Computing Machinery (ACM) Recommender Systems Conference*, Oct 2013.
- [11] Gievska S., Marina O. and [Ilievski I.](#), “**Discovering Patterns of Urban Development in Skopje**”, *9th Congress Virtual City and Territory*, Oct 2013.
- [12] [Ilievski I.](#), Gievska S. and Marina O. “**Discovering Patterns of Urban Development**”, *ICT Innovations*, Aug 2013.

AWARDS &

ACHIEVEMENTS

Visual Question Answering Challenge, IEEE CVPR 2017 Jul 2017
1st place for single participants, 3rd overall, in competition about developing machine learning algorithms for answering human-posed questions about images.

NGS Scholarship, National University of Singapore 2014 – 2018
The NGS Scholarship is awarded to talented students with an aptitude for innovative, high calibre Ph.D. research. Awarded to the top 1% of the graduate research students at NUS.

3rd Place in News Recommender Systems Challenge, ACM RecSys Oct 2013
Developing fast and scalable web news recommender system for ACM RecSys challenge.

SIPGA Award, A*STAR, Singapore Jun 2013
The Singapore International Pre-Graduate award supports research attachments for top international students to experience the vibrant scientific environment in A*STAR Research Institutes.

Algorithm Competition Finalist, Codefu 2009 – 2014
Secured a position in the nationwide final competition each year from 2009 to 2014.

WORK EXPERIENCE	Research Assistant , Dep. of Statistics & Applied Probability, NUS Sep 2017 – Present Part-time research assistant working on forecasting financial time series with deep learning.	
	Teaching Assistant , National University of Singapore Modules: [CS3226] Web Programming and Applications [CS1101] Programming Methodology	2015 – 2016
	Research Assistant , Institute for Infocomm Research, A*STAR, Singapore Extracting movie metadata from text descriptions and user watch statistics.	2013
	Software Engineer , Upwork Design and development of full-stack software systems for web and mobile.	2010 – 2014
	Math Tutor Preparing high school students for mathematics competitions.	2008 – 2012
INVITED TALKS	NVIDIA AI Conference , Singapore “Efficient Hyperparameter Optimization of Deep Learning Algorithms Using Deterministic RBF Surrogates”	24 Oct 2017
	QuantCon , Singapore “Deep Reinforcement Learning for Optimal Order Placement in a Limit Order Book”	29 Sep 2017
	DSO National Laboratories , Singapore “Focused Dynamic Attention Model for Visual Question Answering”	07 Sep 2017
	RE•WORK: Deep Learning in Finance Summit Asia , Singapore “Deep Reinforcement Learning for Optimal Order Placement in a Limit Order Book”	27 Apr 2017
	RE•WORK: Deep Learning Summit Asia , Singapore “Reasoning with Deep Learning: the Visual Question Answering Problem”	20 Oct 2016
	NVIDIA GTCx , Australia “Deep Learning Solutions for Visual World Understanding”	04 Oct 2016
SKILLS	Excellent programming skills in Python, Java, and JavaScript, working knowledge in C/C++. Everyday use of numpy, pandas, scipy, and matplotlib python libraries, and expert knowledge and contributor to PyTorch and Torch deep learning frameworks. Strong analytical and problem solving skills, excellent communication skills and collaborative work ethic.	
INTERESTS	Algorithm competitions and marathon running.	
	References available upon request.	

Nov 2017