Tetiana Parshakova

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OBJECTIVE

To develop novel learning algorithms using techniques from optimization and statistics, to bring theoretical guarantees about the convergence of iterative methods and the quality of the produced solutions, and to obtain the control models in the approximate dynamical system environments

EDUCATION

Master of Science, Electrical Engineering
Korea Advanced Institute of Science and Technology, March 2017 - February 2019
Concentration: Machine Learning, GPA: 4.07/4.3 (97.44%)
Laboratory: Brain Reverse Engineering and Imaging Lab, supervised by Dae-Shik Kim

Bachelor of Science, Industrial Design (College of Information Science and Technology)
Korea Advanced Institute of Science and Technology, March 2012 - February 2017
Concentration: Computer Human Interaction, *Magna Cum Laude*, GPA: 3.85/4.3 (95%)
Laboratory: My Design Lab, supervised by Daniel Saakes

High School, Mathematics
Ukrainian Lyceum of Physics and Mathematics of Taras Shevchenko National University of Kyiv, September 2009 - May 2012
Concentration: Mathematics, Computer Science, *Gold Medal*

PUBLISHED WORK

Tetiana Parshakova, Francois Rameau, Andriy Serdega, In So Kweon and Dae-Shik Kim. **Latent Question Interpretation Through Parameter Adaptation**. *Submitted* to IEEE/ACM Transactions on Audio, Speech, and Language Processing. 2018

Tetiana Parshakova and Dae-Shik Kim. **Latent Question Interpretation Through Parameter Adaptation Using Stochastic Neuron**. In Proceedings of ICML Workshop, MRC-2018, `http://ceur-ws.org/Vol-2134/#paper07`. 2018

Tetiana Parshakova and Daniel Saakes. **UMorph: Self-Change Tracker to Reflect Yourself to the Future and Past**. In Proceedings of the 2018 ACM Conference Companion Publication on Designing Interactive Systems, ACM. 2018

Tetiana Parshakova, Minjoo Cho, Alvaro Cassinelli, and Daniel Saakes. **Furniture that Learns to Move Itself**. In Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems, ACM. 2017

Tetiana Parshakova, Minjoo Cho, Alvaro Cassinelli, and Daniel Saakes. **Ratchair: Furniture learns to move itself with vibration**. In ACM SIGGRAPH 2016 Emerging Technologies, ACM. 2016

RESEARCH EXPERIENCE

Graduate Researcher   2017-2018
Brain Reverse Engineering and Imaging Lab, KAIST

- "Latent Question Interpretation Through Parameter Adaptation", a model that learns multiple interpretations of a given question. This diversity is ensured by our "interpretation policy" which automatically adapts the parameters of a QA model with respect to a discrete latent variable (using PyTorch).
- "Visual Question Answering" model with bottom-up and top-down attention. Explored the influence of policy gradient and new attention on the output layer; ways to align image features with text information to obtain image-aware question representation (using PyTorch).
- "Abstractive Text Summarizer", a model that combines Pointer generator networks with Seq2seq attention model, by constructing a hybrid distribution over the vocabulary from which it eventually generates the summary. Explored the effectiveness of CNN attention, diversity loss and data augmentation (using English dictionary) (using Tensorflow).
- "DDPG with Attention-based LSTM State Encoder" is a sequential decision making agent for solving 'Angry Birds' using Deep Deterministic Policy Gradient (DDPG) with Attention-based LSTM for state encoding. For exploration with a deterministic policy we use actor critic algorithm for learning off policy with a stochastic behavior policy (using Tensorflow).
- "Opinion Generator" is a model, which aims to capture a global 'pathway' of an opinion as a response to other statement. It consists of CNN encoders, that operate on character level, and whose outputs are given to recurrent block to combine sentences over time, so that the produced context representations are used to condition the CNN decoder (using Tensorflow).

Undergraduate Researcher   2016
Brain Reverse Engineering and Imaging Lab, KAIST

- Machine Learning and Reinforcement Learning basics
- Worked on "Comic style generation using neural networks" using Lua and Torch

Undergraduate Researcher   2015-2016
My Design Lab, KAIST

- "Ratchair" is a strategy for displacing objects utilizing vibrations, `http://mid.kaist.ac.kr/projects/ratchair/`. Used: Python, Java, Android, OpenCV, Arduino, Inventor, Processing-Android, Myo Armband, hardware
- "UMorph" is an unobtrusive self-image capturing system for tracking self changes over time. Used: PyQt, Dragon Board 410c, OpenCV, Dlib, hardware

HONORS & AWARDS	Qualcomm-KAIST Innovation Awards 2018 (Paper Competition Awards for Graduate Students) for "Latent Question Interpretation Through Parameter Adaptation Using Stochastic Neuron"	2018
	"Ratchair: Furniture That Learns to Move Itself" demonstration for Discovery Daily Planet Canada show	2017
	"Furniture That Learns to Move Itself" featured in KAIST Breakthroughs Newsletter	2017
	Excellence Award for Bachelor's thesis "UMorph: Self-Change Tracker to Reflect Yourself to the Past and to the Future"	2017
	First prize in Qualcomm-KAIST Innovation Awards 2016 (Embedded Systems Awards) for "My Life Journey (Unobtrusive Self-Image Capturing System for Tracking Self Changes over Time)"	2016
	SIGGRAPH 2016 Emerging Technologies DC EXPO Special Prize for "Ratchair: Furniture That Learns to Move Itself With Vibration"	2016
	Undergraduate Research Program Excellence Award for Extraordinary Efforts and Research Outcomes	2016
	KAIST International Student Scholarship	2012-2016, 2017-2019
	Bronze medals at Kyiv Capital Olympiads in Mathematics, Ukraine	2009, 2012
	Silver medal at Regional Mathematics Olympiad	2009
	Participant of Ukrainian Olympiad in Mathematics	2008
	Gold medal at Volyn Regional Mathematics Olympiad	2008
COMPUTER SKILLS	*Languages & Software:* Python, Java, Torch, Tensorflow, PyTorch, Git, LaTeX, OpenCV. *Prototyping:* Raspberry Pi, Arduino, Processing-Android, Inventor. *Operating Systems:* Unix.	
EXTRA-CURRICULAR	Tutor at EE Co-op program. Prepared undergraduate students for internship at Kakao in Natural Language Processing using Deep learning. Taught basic Machine Learning, Tensorflow and research papers related to Neural Machine Translation.	2018
	Tutor in science camp for high school students. Helped to prepare for a science competition.	2017, 2018
	Participated in student liaison for KAIST EE promotion in Ukraine. Recruited students in Ukraine and helped organize EE Visit Camp.	2017
	Tutor in English Camp for elementary and middle school children in Yeonggwang.	2017, 2018
	Teaching Assistant at KAIST: Introduction to Philosophy, English Short Stories, Philosophy of Mathematics, Logic and Artificial Intelligence	2015, 2016
	Volunteer at UEFA Euro 2012. Participated in closing ceremony dance performance in Kyiv.	2012