Wonseok Jeon (Last Update: December 11, 2020)

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Summary

- Research interests during postdoc periods include (1) reinforcement learning (2) imitation learning, (3) inverse reinforcement learning, (4) multi-agent learning, and (5) Bayesian inference
  1. Generalization of maximum entropy inverse reinforcement learning framework with a broader class of convex policy regularizers (NeurIPS deep RL workshop 2020, under review at ICLR 2021)
  2. Simplification of adversarial imitation learning via bypassing reinforcement learning steps through novel structured discriminators (NeurIPS 2020 **Spotlight Presentation**)
  3. Sample-efficient, multi-agent, adversarial imitation learning method scalable to many agents (AAAI workshop on RLG 2020)
  4. Improving Monte-Carlo Tree Search (MCTS) algorithm in continuous controls by updating sampled action particles through value gradients (AAAI 2020)
  5. Application of reinforcement learning to stabilize the learning procedure and performance of sequential Bayesian inference (ACML 2019)
  6. Proposing Bayesian perspective to adversarial imitation learning and improving sample efficiency of imitation learning (NeurIPS 2018 **Spotlight Presentation**)
- Research interests during Ph. D. include (1) information theory, (2) wireless commuication, and (3) electromagnetic theory
  1. Analysis of the information-theoretic capacity regarding the physical size of transceivers (ISIT 2013, ISIT 2015, IEEE Transitions on Information Theory 2018)
  2. How to exploit the spatial structure of vector antenna array to achieve better transmission rates (IEEE Antennas and Wireless Propagation Letters 2017)
- Programming skills:
  - Proficient level: Python, MATLAB, deep learning libraries (PyTorch, TensorFlow, Keras), modularized RL frameworks (Ray/RLlib, Rlpyt)
  - Intermediate level: C++

Education

May 2019 – Present (**1 yr 8 mos** as of December 11, 2020) **Postdoctoral Researcher**

- **Mila** - Quebec AI Institute / School of Computer Science (SoCS), **McGill University**
- Advisor: Prof. **Joelle Pineau** at Mila / McGill University / Facebook AI Research (FAIR)

Sep 2017 – April 2019 (**1 yr 8 mos**) **Postdoctoral Researcher**

- School of Computing (CS), Korea Advanced Institute of Science and Technology (**KAIST**)
- Advisor: Prof. **Kee-Eung Kim** at KAIST / Secondmind

Feb 2011 – Aug 2017 (**6 yr 7 mos**) **Ph.D.**

- School of Electrical Engineering (EE), Korea Advanced Institute of Science and Technology (**KAIST**)
- Advisor: Prof. **Sae-Young Chung** at KAIST

Mar 2007 – Feb 2011 (**4 yr**) **B.S.**

- School of Electrical and Electronic Engineering (EEE), **Yonsei University**

Publications (J: Journal, C: Conference, W: Workshop, P: Preprint)

Publications on Machine Learning (2018−Present)

- [W4] **W. Jeon**, C.-Y. Su, P. Barde, T. Doan, D. Nowrouzezahrai, J. Pineau,
  "Regularized inverse reinforcement learning,"
  NeurIPS Deep Reinforcement Learning Workshop (DRLW) 2020
  under review at ICLR 2021 **(Intermediate Ranking (link): 96/2975=3.19%)**
- [C7] P. Barde*, J. Roy*, **W. Jeon***, J. Pineau, C. Pal, D. Nowrouzezahrai, (*Equal Contribution)
  "Adversarial soft advantage fitting: Imitation learning without policy optimization,"
  NeurIPS 2020 **(Spotlight Presentation, 395/9454=4.07%)**
- [W3] **W. Jeon**, P. Barde, D. Nowrouzezahrai, J. Pineau,
  "Scalable and sample-efficient multi-agent imitation learning,"
  AAAI workshop on Reinforcement Learning in Games (RLG) 2020
- [C6] J. Lee, **W. Jeon**, G.-H. Kim, K.-E. Kim,
  "Monte-Carlo tree search in continuous action spaces with value gradients,"
  AAAI 2020
- [C5] G.-H. Kim, Y. Jang, J. Lee, **W. Jeon**, H. Yang, K.-E. Kim,
  "Trust region sequential variational inference,"
  ACML 2019
- [C4] **W. Jeon**, S. Seo, K.-E. Kim,
  "A Bayesian approach to generative adversarial imitation learning,"
  NeurIPS 2018 **(Spotlight Presentation, 168/4856=3.46%)**

Publications on Information Theory and Wireless Communication (2013−2018)

- [J3] **W. Jeon**, S.-Y. Chung,
  "Capacity of continuous-space electromagnetic channels with lossy transceiver,"
  IEEE Transactions on Information Theory, Mar 2018
- [J2] J. H. Kim, **W. Jeon**, S.-Y. Chung,
  "Asymptotic analysis on directivity and beamwidth of uniform circular array,"
  IEEE Antennas and Wireless Propagation Letters, Oct 2017
- [J1] **W. Jeon**, J. H. Kim, S.-Y. Chung,
  "Effect of mutual coupling on uniform circular arrays with vector antenna elements,"
  IEEE Antennas and Wireless Propagation Letters, Feb 2017
- [W2] **W. Jeon**, S.-Y. Chung,
  "Interference mitigation using receiver superdirectivity,"
  Information Theory and Applications Workshop 2016 **(Invited talk)**
- [C3] **W. Jeon**, S.-Y. Chung,
  "Interference mitigation using antenna mutual coupling,"
  Asilomar Conference on Signals, Systems and Computers 2016 **(Invited paper)**
- [C2] **W. Jeon**, S.-Y. Chung,
  "Improving degrees of freedom of wireless channels using superdirectivity,"
  IEEE ISIT 2015
- [W1] **W. Jeon**, S.-Y. Chung,
  "Noise spatial correlation and receive superdirectivity in wireless channels,"
  ITA Workshop 2015 **(Invited paper)**
- [C1] **W. Jeon**, S.-Y. Chung,
  "The capacity of wireless channels: A physical approach,"
  IEEE ISIT 2013

Preprint

- [P1] **W. Jeon**, P. Barde, D. Nowrouzezahrai, J. Pineau,
  "Scalable multi-agent inverse reinforcement learning via actor-attention-critic,"
  preprint 2020

National and Industrial Research Projects

Sep 2017 – Dec 2018 (**1 yr 4mos**) **IITP (National Research Foundations of South Korea)**

- Development of explainable human-level deep machine learning inference framework

Jul 2016 – Aug 2017 (**1 yr 2mos**) **Samsung Electronics**

- Machine learning for flash memory and SSD framework

Mar 2016 – Aug 2017 (**1 yr 6mos**) **Global Frontier (National Research Foundation of South Korea)**

- Development of reinforcement learning scheme and system for IoT environment

Aug 2012 – Aug 2015 (**3 yr 1mos**) **LG Electronics**

- Development of next-generation wireless communication scheme for 5G communication

Mar 2011 – Feb 2013 (**2 yr**) **Ministry of Science, ICT and Future Planning, South Korea**

- Development of adaptive beam multiple access technology without interference based on antenna node grouping

Reviewer Activities

- Conference: NeurIPS 2019/2020, AAAI 2019/2021, ICLR 2020/2021, ACML 2019/2020
- Journal: IEEE Antennas and Wireless Propagation Letters

Open Source Activity

- "Multi-Agent Deterministic Deep Policy Gradient (MA-DDPG)" at Ray/RLlib (link)

Talks

- (Mar 20 2019) "A Bayesian approach to generative adversarial imitation learning" at SK T-Brain

Scholarship, Honor and Awards

- **Qualcomm-KAIST Innovation Award 2015**
  "Superdirectivity in Wireless Channels," [QCI Award-2015-07]
- **National Scholarship for Science and Engineering 2007-2011** **(fully-funded)**