

# ZIZHAO WANG

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## EDUCATION

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<b>Columbia University</b> MS in Computer Science, GPA: 4.00/4.00	<i>Sept. 2018 - Dec. 2019</i>
<b>University of Michigan - Ann Arbor</b> BS in Computer Engineering, GPA: 3.96/4.00	<i>Sept. 2016 - Apr. 2018</i>
<b>Shanghai Jiao Tong University</b> BS in Electrical and Computer Engineering, GPA: 3.71/4.00	<i>Sept. 2014 - Aug. 2018</i>

## PUBLICATIONS

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Iretiayo Akinola\*, **Zizhao Wang\***, Junyao Shi, Xiaomin He, Pawan Lapborisuth, Jingxi Xu, David Watkins-Valls, Paul Sajda, and Peter Allen. Accelerated Robot Learning via Human Brain Signals. *In review of International Conference on Robotics and Automation (ICRA)*, 2019.

Antonio Khalil Moretti\*, **Zizhao Wang\***, Luhuan Wu\*, Iddo Drori, Itsik Pe'er. Particle Smoothing Variational Objectives. *In review of European Conference on Artificial Intelligence (ECAI)*, 2019.

Antonio Khalil Moretti\*, **Zizhao Wang\***, Luhuan Wu, Itsik Pe'er. Smoothing Nonlinear Variational Objectives with Sequential Monte Carlo. *In International Conference on Learning Representations (ICLR)*, 2019.

## RESEARCH AND PROJECTS

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<b>Variational Inference in Time Series</b> <i>Research Assistant, Columbia University</i>	<i>Sept. 2018 - Now</i> <i>New York, NY</i>
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- Designed a variational objective based on particle smoothing, and the objective can learn the dynamic system and infer hidden states only based on observations.
- Enabled prediction for various nonlinear chaotic system and reduced the prediction error by 60% than previous methods.
- Appeared at ICLR 2019 workshop: openreview. Full paper in preprint: arxiv.

<b>Accelerate Reinforcement Learning (RL) via Human Brain Signals</b> <i>Research Assistant, Columbia University</i>	<i>Feb. 2019 - Now</i> <i>New York, NY</i>
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- Designed a framework to speed up RL in sparse reward environments by augmenting RL with a efficient policy learned from human feedback, and the feedback was provided through a Brain-Computer Interface.
- Experimented on robot navigation tasks with real human subjects, achieving performance comparable to RL agents learning from human designed rich rewards.
- Submitted to ICRA 2020: arxiv.

<b>Data-driven Estimated Time of Arrival</b> <i>Senior Project, Shanghai Jiao Tong University</i>	<i>May. 2018 - Aug. 2018</i> <i>Shanghai, China</i>
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- Predicted travel time for taxis drivers, achieving prediction error  $< 10\%$ .

- Matched trajectory GPS with road map using hidden markov model and managed data with PostgreSQL database.
- Applied convolutional neural networks to capturing the spatial-temporal relationship in the traffic conditions.

### **Reinforcement Learning Verification Challenge**

*Oct. 2017 - Dec. 2017*

*University of Michigan*

*Ann Arbor, MI*

- Reproduced and verified the paper "Jointly Learning to Construct and Control Agents Using Deep Reinforcement Learning" in ICLR 2018 Verification Challenge.
- Implemented parameter-exploring policy gradient and proximal policy optimization, to jointly optimize the physical design and control policy of the robot.

## **HONORS AND AWARDS**

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Jackson and Muriel Lums Scholarship (top 5%)

*July. 2016*

Mathematical Contest in Modelling - Meritorious Winner (top 10%)

*Jan. 2016*

Kehui Scholarship (top 2%)

*Sept. 2014*

## **SKILLS**

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**Languages** Python (TensorFlow), C, C++, PostgreSQL, MatLab