# Sungyong Seo


CONTACT INFORMATION

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RESEARCH INTERESTS

Spatio-temporal data mining and learning, Graph-based neural networks,
Time series forecasting

EDUCATION

Ph.D., **University of Southern California**, Los Angeles, CA — Aug. 2015 - Present
Computer Science, Advisor: Prof. Yan Liu

M.S., **University of Michigan**, Ann Arbor, MI — Sept. 2012 - Dec. 2013
Electrical Engineering, Advisor: Prof. Jay Guo

B.S., **Seoul National University**, Seoul, South Korea — Mar. 2005 - Feb. 2012
Electrical and Computer Engineering, Minor in Physics,
Graduated with honors

**Nanyang Technological University**, Singapore — Jan. 2008 - May 2008
TF-NTU LEaRN Program Visiting Student

SELECTED PUBLICATIONS

**Conference - CS field**

- Karishma Sharma, **Sungyong Seo**, Xinran He and Yan Liu, Network Inference from a Mixture of Diffusion Models (Submitted)
- **Sungyong Seo** and Yan Liu, Differentiable Physics-informed Graph Networks, *International Conference on Machine Learning (ICML 2019)* (Submitted)
- Ashok Deb, Anuja Majmundar, **Sungyong Seo**, Akira Matsui, Rajat Tandon, Shen Yan, Jon-Patrick Allem and Emilio Ferrara, Social Bots for Online Public Health Interventions, *2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM) 2018*
- **Sungong Seo**, Arash Mohegh, George Ban-Weiss, Yan Liu, Automatically Inferring Data Quality for Spatiotemporal Forecasting, *6th International Conference on Learning Representations (ICLR) 2018*
- **Sungong Seo**, Hau Chan, P. Jeffrey Brantingham, Jorja Leap, Phebe Vayanos, Milind Tambe, and Yan Liu, Partially Generative Neural Networks for Gang Crime Classification with Partial Information, *AAAI/ACM Conference on AI, Ethics, and Society (AIES) 2018* (Oral presentation)
- **Sungyong Seo***, Natali Ruchansky*, and Yan Liu, CSI: A Hybrid Deep Model For Fake News Detection, *The 25th ACM International Conference on Information and Knowledge Management (CIKM) 2017.* * equally contributed
- **Sungyong Seo**, Jing Huang, Hao Yang, and Yan Liu, Interpretable Convolutional Neural Networks with Dual Local and Global Attention for Review Rating Prediction, *Proceedings of the 11st ACM Conference on Recommender Systems (RecSys) 2017*

**Workshop, Preprints**

- **Sungyong Seo**, Arash Mohegh, George Ban-Weiss, and Yan Liu, Data Quality Network for Spatiotemporal Forecasting. *Deep Learning for Physical Sciences Workshop at the 31st Conference on Neural Information Processing Systems (DLPS-NIPS) 2017*
- **Sungyong Seo**, Arash Mohegh, George Ban-Weiss, and Yan Liu, Graph Convolutional Autoencoder with Recurrent Neural Networks for Spatiotemporal Forecasting. *Proceedings of the Seventh International Workshop on Climate Informatics. (CI) 2017*
- **Sungyong Seo**, Jing Huang, Hao Yang, and Yan Liu, Representation Learning of Users and Items for Review Rating Prediction Using Attention-based Convolutional Neural Network, *SIAM International Conference on Data Mining (SDM) 3rd International Workshop on Machine Learning Methods for Recommender Systems (MLRec) 2017*

**Journal - EE field**

- **Sungyong Seo***, Kyu-Tae Lee*, and L. Jay Guo, High color purity subtractive color filters with wide viewing angle based on plasmonic perfect absorbers, *Adv. Opt. Mater.* * equally contributed
- Kyu-Tae Lee*, Jae Yong Lee*, **Sungyong Seo**, and L. Jay Guo, Cascaded ultra-thin hybrid photovoltaics with controllable color appearance by spectrum splitting, *Light Sci Appl*, **3**(e215); DOI: 10.1038/lsa.2014.96, 2014 * equally contributed
- Kyu-Tae Lee, **Sungyong Seo**, Jae Yong Lee, and L. Jay Guo, Strong Resonance Effect in a Lossy Medium-Based Optical Cavity for Angle Robust Spectrum Filters, *Adv. Mater.* **26**, 6324-6328, 2014
- Kyu-Tae Lee, **Sungyong Seo**, Jae Yong Lee, and L. Jay Guo, Ultrathin metal-semiconductor-metal resonator for angle invariant visible band transmission filters, *Appl. Phys. Lett.* **104**, 231112, 2014 **- Highlighted/reported by Science Daily, NSF, Popular Science, PhysOrg, and etc.**

## Work Experience

**Yahoo! Research** — New York, NY
*Research Intern* — May 2018 - Aug. 2018

- Developed time-series forecasting and clustering models by extracting patterns in internal billing records.

**Visa Research** — Foster City, CA
*Research Intern* — Jun. 2016 - Aug. 2016

- Worked with Jing Huang in Data Analytics team on Visa Research. Developed recommendation systems utilizing review on products based on attention CNN.

**December and Company** — Seoul, South Korea
*Software Engineer* — Feb. 2015 - Jun. 2015

- Developed software platform for algorithmic trading in stock and derivatives markets. Data preprocessing and analysis for machine trading or robo-advisor.

## Honors and Awards

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| ICLR Travel Award | May. 2018 |
| NIPS DLPS Workshop Travel Support | Dec. 2017 |
| SIGIR Travel Award, US NSF and SIGWEB Travel Award (CIKM) | Nov. 2017 |
| Travel Fellowship Award to Climate Informatics Workshop | Sep. 2017 |
| USC Annenberg Graduate Fellowship | Aug. 2015 - May 2019 |
| Departmental Fellowship from Electrical Engineering | Jan. 2014 - Apr. 2014 |
| Temasek Foundatdion - NTU LEaRN Scholarship | Jan. 2008 - May 2008 |
| National Science and Technology Scholarship | Mar. 2005 - Dec. 2010 |