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John Boaz Lee

Researcher working in the areas of deep learning, graph & data mining, reinforcement learning, & machine learning.

Education

2015–2019 **Worcester Polytechnic Institute**, *PhD in Computer Science (GPA 4.0/4.0).*
Thesis: Deep Learning on Graph-structured Data
Advisor: Xiangnan Kong

2010–2012 **University of the Philippines – Diliman**, *MS in Computer Science (GPA 4.0/4.0).*
Thesis: A Link Prediction Algorithm for Heterogeneous Bibliographic Information Networks
Advisor: Henry Adorna

2004–2008 **Silliman University**, *BS in Computer Science (GPA 3.1/4.0).*
Thesis: Dumaguete e-Traveler – A Knowledge-based Decision Support System
Advisor: Dave E. Marcial

Experience

2020–present **Facebook Research**, *Research Scientist. CA, USA.*
Working on sequence and graph-based machine learning. Successfully launched two models within first 6 months. First model increased notification CTR by 2.3% and second model doubled overall system recall.

summer of 2019 **Facebook Research**, *Research Intern. CA, USA.*
Deployed a recurrent pipeline which generated unified person-level embeddings by leveraging interactions from across FB's family of apps. Demonstrated the usefulness of the embeddings for a variety of tasks.

summer of 2018 **Adobe Research**, *Research Intern. CA, USA.*
Worked on a deep learning model for user stitching which was deployed internally; this also resulted in the publication of two research papers and a patent submission.

summer of 2017 **Xerox PARC**, *Research Intern. CA, USA.*
Led a project on graph classification and collaborated on a network representation learning project. Managed to publish two research papers from these projects.

2015–2019 **Worcester Polytechnic Institute**, *Research Assistant. MA, USA.*
Researched and developed deep learning solutions for relational data. Also assisted in the ff. courses during time as a TA: data mining, software security, computer networks, and theory of computation.

2012–2015 **Ateneo de Manila University**, *Instructor. Manila, Philippines.*
Handled the ff. courses: algorithms and data structures, Java programming, C# programming, and design patterns. Also played a minor role in coaching the competitive programming team.

fall of 2012 **Nara Institute of Science and Technology**, *Research Intern. Nara, Japan.*
Proposed and implemented a method for automatic software patch reviewer recommendation. The research was published and won a "Best Presentation Paper" award.

2010–2012 **University of the Philippines – Diliman**, *Instructor. Manila, Philippines.*
Handled the ff. courses: C programming, software engineering, algorithms and data structures. Courses were taught primarily to an audience with minimal computing background.

2008–2009 **Interprise Solutions**, *Software Engineer. Cebu, Philippines.*
Designed and developed tools used in the application development framework of an ERP system.

spring of 2006 **Neri and Hu Design and Research Office**, *Software Engineer Intern. Shanghai, China.*
Designed and implemented an in-house inventory management system.

Publications

[1] X. Dai, X. Kong, T. Guo, **J. B. Lee**, X. Liu, & C. Moore. Recurrent networks for guided multi-attention classification. In *Proc. of ACM SIGKDD International Conference on Knowledge Discovery and Data Mining* (**KDD**). 2020.

[2] N. K. Ahmed, R. A. Rossi, **J. B. Lee**, T. L. Willke, R. Zhou, X. Kong, & H. Eldardiry. Role-based graph embeddings. *IEEE Transactions on Knowledge and Data Engineering* (**TKDE**) 32, 8. 2020.

[3] R. A. Rossi, D. Jin, S. Kim, N. K. Ahmed, D. Koutra, & **J. B. Lee**. On proximity and structural role-based embeddings in networks: Misconceptions, techniques, and applications. *ACM Transactions on Knowledge Discovery from Data* (**TKDD**) 14, 5. 2020.

[4] **J. B. Lee**, X. Kong, C. M. Moore, & N. K. Ahmed. Deep parametric model for discovering group-cohesive functional brain regions. In *Proc. of SIAM International Conference on Data Mining* (**SDM**). 2020.

[5] X. Dai, X. Kong, X. Liu, **J. B. Lee**, & C. Moore. Dual-attention recurrent networks for affine registration of neuroimaging data. In *Proc. of SIAM International Conference on Data Mining* (**SDM**). 2020.

[6] **J. B. Lee**, R. A. Rossi, S. Kim, N. K. Ahmed, & E. Koh. Attention models in graphs: A survey. *ACM Transactions on Knowledge Discovery from Data* (**TKDD**) 13, 6. 2019.

[7] **J. B. Lee**, R. A. Rossi, X. Kong, S. Kim, E. Koh, & A. Rao. Graph convolutional networks with motif-based attention. In *Proc. of ACM International Conference on Information and Knowledge Management* (**CIKM**). 2019.

[8] **J. B. Lee** & X. Kong. Learning compact graph representations via an encoder-decoder network. *Applied Network Science* (**ANS**) 5, 1. 2019.

[9] G. Nguyen, **J. B. Lee**, R. Rossi, N. Ahmed, E. Koh, & S. Kim. Dynamic network embeddings: From random walks to temporal random walks. In *Proc. of IEEE International Conference on Big Data* (**BigData**). 2018.

[10] **J. B. Lee**, R. A. Rossi, & X. Kong. Graph classification using structural attention. In *Proc. of ACM SIGKDD International Conference on Knowledge Discovery and Data Mining* (**KDD**). 2018.

[11] G. Nguyen, **J. B. Lee**, R. Rossi, N. Ahmed, E. Koh, & S. Kim. Continuous-time dynamic network embedding. In *Comp. Proc. of International Conference on World Wide Web* (**WWW**). 2018.

[12] **J. B. Lee**, X. Kong, Y. Bao, & C. Moore. Identifying non-linear contrasting networks from time-series data: Application to brain network analysis. In *Proc. of SIAM International Conference on Data Mining* (**SDM**). 2017.

[13] **J. B. Lee**, A. Ihara, A. Monden, & K. Matsumoto. Patch reviewer recommendation in OSS projects. In *Proc. of Asia-Pacific Software Engineering Conference* (**APSEC**). 2013.

[14] **J. B. Lee**, M. Ybañez, M. M. de Leon, and M. R. E. Estuar. Understanding the behavior of Filipino Twitter users during disaster. *Journal on Computing* (**JoC**) 3, 2. 2013.

[15] **J. B. Lee** & M. Ybañez. Characterizing behavior and features of participants and observers during disaster on Twitter. In *Proc. of International Conference on Computer Games Multimedia and Allied Technologies* (**CGAT**). 2013.

[16] **J. B. Lee** & H. Adorna. Link prediction in a modified heterogeneous bibliographic network. In *Proc. of International Conference on Advances in Social Networks Analysis and Mining* (**ASONAM**). 2012.

[17] **J. B. Lee**, G. Cabunducan, R. Castillo, F. G. Cabarle, & J. A. Malinao. Uncovering the social dynamics of online elections. *Journal of Universal Computer Science* (**JUCS**) 18, 4. 2012.

[18] J. A. Malinao, R. A. B. Juayong, E. R. F. Oquendo, R. M. U. Tadlas, **J. B. Lee**, J. B. Clemente, M. S. Gaabucayan-Napalang, J. R. F. Regidor, & H. N. Adorna. A quantitative analysis-based algorithm for optimal data signature construction of traffic data sets. *Journal of Information Processing* (**JIP**) 20, 3. 2012.

[19] G. Cabunducan, R. Castillo, & **J. B. Lee**. Voting behavior analysis in the election of Wikipedia admins. In *Proc. of International Conference on Advances in Social Networks Analysis and Mining* (**ASONAM**). 2011.

[20] J. A. Malinao, R. A. B. Juayong, E. R. F. Oquendo, R. M. U. Tadlas, **J. B. T. Lee**, J. B. Clemente, M. S. Gaabucayan-Napalang, J. R. F. Regidor, and H. N. Adorna. A quantitative analysis-based algorithm for optimal data signature construction of traffic data sets. In *Proc. of International Conference on Computers, Networks, Systems, and Industrial Engineering* (**CNSI**). 2011.

Manuscripts

[1] **J. B. Lee**, X. Kong, & C. Moore. Multi-level group-wise brain region discovery. *(in submission)*.

[2] Y. Hang, **J. B. Lee**, X. Kong, & Y. Li. Sparsifying the parameters of deep SNNs. *(in submission)*.

Professional service

PC member	CIKM ('20), BigData ('18, '20)
Reviewer	VLDB Journal ('20), TKDD ('17), TKDE ('17), & JUCS ('12)
Ext. reviewer	KDD ('16, '17, '18, '19), SDM ('17, '18, '19), ICLR ('18, '19), IJCAI ('17, '19), ICDM ('19), ASONAM ('17, '18), NeurIPS ('16, '18), ICDE ('17), AISTAT ('17), CIKM ('16), & AAAI ('16)

Awards

2018	KDD Travel Award, ACM & NSF
2018	GRIE Best Poster Honorable Mention, WPI CS Dept.
2013	Best Presentation Award, IWESEP
2012	Honors Graduate, Phi Kappa Phi
2011	Best Poster Paper, ASONAM

Computer skills

Programming	Python, Java, C#, C, LaTeX, Haskell, & SQL
Frameworks	PyTorch, TensorFlow, scikit-learn, SciPy, Matplotlib, & NumPy
Tools	Jupyter Notebook, VS Code, GNU Screen, Virtualenv, Git, & Mercurial

Languages

Native	English, Tagalog, & Cebuano
Intermediate	Mandarin

References

A full list of references is available upon request.