Xiangnan He

Mobile: (+65)91062899Contact Email: xiangnanhe@gmail.com Information Homepage: http://www.comp.nus.edu.sg/~xiangnan Address: AS6-04-19, Computing Drive, Singapore 117417 Research Big Data Analytics: Information Retrieval, Recommender System, Multimedia, Fintech Interests Computational Social Science: Social Media Mining, Behavioral Analysis Machine Learning: Deep Learning, Online Learning, Knowledge Graph EDUCATION National University of Singapore Jul 2011 – Apr 2016 Ph.D. in Computer Science, GPA 4.69 / 5.0 Advisor: Prof. Kan Min-Yen East China Normal University Sep 2007 – Jun 2011 BSc. in Software Engineering, GPA 3.65 / 4.0 (Rank: 2nd / 230) Advisor: Prof. Zhou Aoving and Prof. Jin Cheqing. Working National University of Singapore, Senior Research Fellow Jan 2018 – Present EXPERIENCE National University of Singapore, Research Fellow May 2016 - Dec 2017Leading a team and mentoring students working on: 1) Recommender System, 2) Multimedia Data Mining, and 3) Financial Technology. Advisor: Prof. Chua Tat-Seng OVERSEAS Jun 2015 - Sep 2015 Google Research (Mountain View, US), Intern EXPERIENCE Developing methods for large-scale context-aware recommender systems. Advisor: Dr. Steffen Rendle and Dr. Bhargav Kanagal Google (New York, US), Intern Jun 2014 — Sep 2014 Developing local chain mining methods for improving chain search. Advisor: Dr. Thomas Sidoti and Dr. Zhang Sheng Teaching I have served as a **Teaching Assistant** at NUS for the following modules: EXPERIENCE CS5228 Knowledge Discovery and Data Mining Semester 1 2014/2015 Teaching tutorials, designing course projects, and grading assignments. CS3245 Information Retrieval Semester 2 2013/2014 Grading and helping on lab projects. CS1020 Data Structure and Algorithms Semester 1 2013/2014 Teaching tutorials, designing and grading assignments. SELECTED WWW 2018 Best Paper Honorable Mention April 2018 AWARDS WWW 2018 Best Poster Award April 2018 ACM SIGIR 2016 Best Paper Honorable Mention July 2016 Oct 2014 Research Achievement Award (aka the Dean's Graduate Award) ACM SIGIR 2014 Student Travel Grant July 2014 National University of Singapore Research Scholarship 2011 - 2015 Oct 2010 IBM Chinese Excellent Student Scholarship Oct 2010 National Scholarship (top scholarship for Chinese undergraduates) Shanghai Innovation Fund (as the team leader) May 2010 **PUBLICATIONS** Published: 4 tutorials, 7 journal papers, and 44 conference papers

Impact: 600+ citations, h-index: 14, and i10-index: 15

My Google scholar page: https://scholar.google.com.sg/citations?user=X45Go24AAAAJ&hl=en

* indicates that the paper is done my the Ph.D. or intern student mentored by me.

Tutorials

- [T1] Xiangnan He, Hanwang Zhang, and Tat-Seng Chua (2018). Recommendation Technologies for Multimedia Content. ACM International Conference on Multimedia Retrieval (ICMR).
- [T2] Jun Xu, Xiangnan He, and Hang Li (2018). Deep Learning for Matching in Search and Recommendation. ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR).
- [T3] Zhaochun Ren, Xiangnan He, Dawei Yin, and Maarten de Rijke (2018). *Information Discovery in E-commerce*. ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR).
- [T4] Jun Xu, Xiangnan He, and Hang Li (2018). Deep Learning for Matching in Search and Recommendation. International Conference on World Wide Web (WWW).

Journal Papers

- [J1] Xiangnan He, Zhankui He, Jingkuan Song, Zhenguang Liu, Yu-Gang Jiang, and Tat-Seng Chua (2018). NAIS: Neural Attentive Item Similarity Model for Recommendation. IEEE Transactions on Knowledge and Data Engineering (TKDE).
- [J2] Lizi Liao*, Xiangnan He, Hanwang Zhang, and Dingxian Wang (2018). Attributed Social Network Embedding. IEEE Transactions on Knowledge and Data Engineering (TKDE).
- [J3] Xiangnan He, Ming Gao, Min-Yen Kan, and Dingxian Wang (2017). BiRank: Towards Ranking on Bipartite Graphs. IEEE Transactions on Knowledge and Data Engineering (TKDE), Vol 29:1, pp. 57–71.
- [J4] Da Cao*, Xiangnan He, Liqiang Nie, Xiaochi Wei, Xia Hu, Shunxiang Wu, and Tat-Seng Chua (2017). Cross-Platform App Recommendation by Jointly Modeling Ratings and Texts. ACM Transactions on Information Systems (TOIS), Vol 35:4, pp. 1–27.
- [J5] Lei Zhu, Zi Huang, Xiaobai Liu, **Xiangnan He**, Jingkuan Song, and Xiaofang Zhou (2017). Discrete Multi-modal Hashing with Canonical Views for Robust Mobile Landmark Search. IEEE Transactions on Multimedia (TMM), Vol 19:9, pp. 2066-2079.
- [J6] Da Cao*, Liqiang Nie, Xiangnan He, Xiaochi Wei, Jialie Shen, Shunxiang Wu, and Tat-Seng Chua (2017). Version-sensitive mobile App recommendation. Information Sciences, Vol 381:C, pp. 161-175.
- [J7] Xiao Chen, Min Liu, Yaqin Zhou, Zhongcheng Li, Shuang Chen, **Xiangnan He** (2017). A Truthful Incentive Mechanism for Online Recruitment in Mobile Crowd Sensing System. Sensors, 17(1):79.

Conference Papers

- [C1] Xiangnan He, Zhankui He, Xiaoyu Du, and Tat-Seng Chua. Adversarial Personalized Ranking for Recommendation. In Proceedings of the 41th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2018).
- [C2] Da Cao*, Xiangnan He, Lianhai Miao, Yahui An, Chao Yang, and Richang Hong. Attentive Group Recommendation. In Proceedings of the 41th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2018).
- [C3] Ming Gao, Leihui Chen*, Xiangnan He, and Aoying Zhou. BiNE: Bipartite Network Embedding. In Proceedings of the 41th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2018).
- [C4] Xin Luo*, Liqiang Nie, Xiangnan He, Ye Wu, Zhen-Duo Chen, and Xin-Shun Xu. Fast Scalable Supervised Hashing. In Proceedings of the 41th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2018).
- [C5] Meng Liu, Xiang Wang*, Liqiang Nie, Xiangnan He, Baoquan Chen and Tat-Seng Chua. Attentive Moment Retrieval in Videos. In Proceedings of the 41th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2018).
- [C6] Xuemeng Song, Xiang Wang, Liqiang Nie, Xiangnan He, Zhumin Chen, and Wei Liu. A Personal Privacy Preserving Framework: I Let You Know Who Can See What. In Proceedings of the

- 41th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2018).
- [C7] Xiangnan He, Xiaoyu Du, Xiang Wang, Feng Tian, Jinhui Tang, and Tat-Seng Chua. Out Product-based Neural Collaborative Filtering. In Proceedings of the 27th International Joint Conference on Artificial Intelligence (IJCAI 2018).
- [C8] Han Liu*, Xiangnan He, Fuli Feng, Liqiang Nie, Rui Liu, and Hanwang Zhang. Discrete Factorization Machines for Fast Feature-based Recommendation. In Proceedings of the 27th International Joint Conference on Artificial Intelligence (IJCAI 2018).
- [C9] Jingtao Ding*, Guanghui Yu, Xiangnan He, Yuhan Quan, Yong Li, Tat-Seng Chua, Depeng Jin, and Jiajie Yu. *Improving Implicit Recommender Systems with View Data*. In Proceedings of the 27th International Joint Conference on Artificial Intelligence (IJCAI 2018).
- [C10] Zhiyong Cheng, Ying Ding, Xiangnan He, Lei Zhu, Xuemeng Song, and Mohan Kankanhalli. AâNCF: An Adaptive Aspect Attention Model for Rating Prediction. In Proceedings of the 27th International Joint Conference on Artificial Intelligence (IJCAI 2018).
- [C11] Tiancheng Shen, Jia Jia, Guangyao Shen, Fuli Feng, Xiangnan He, Huanbo Luan, Jie Tang, Tiropanis Thanassis, Tat-Seng Chua, and Wendy Hall. Cross-Domain Depression Detection via Harvesting Social Media. In Proceedings of the 27th International Joint Conference on Artificial Intelligence (IJCAI 2018).
- [C12] Xiang Wang*, Xiangnan He, Fuli Feng, Liqiang Nie, and Tat-Seng Chua (2018). TEM: Tree-enhanced Embedding Model for Explainable Recommendation. In Proceedings of the 27th International Conference on World Wide Web (WWW 2018).
- [C13] Fuli Feng*, Xiangnan He, Yiqun Liu, Liqiang Nie, and Tat-Seng Chua (2018). Learning on Partial-Order Hypergraphs. In Proceedings of the 27th International Conference on World Wide Web (WWW 2018).
- [C14] Wenhui Yu*, Huidi Zhang, Xiangnan He, Xu Chen, Li Xiong, and Zheng Qin (2018). Aesthetic-based Clothing Recommendation. In Proceedings of the 27th International Conference on World Wide Web (WWW 2018).
- [C15] Jingtao Ding*, Fuli Feng*, Xiangnan He, Guanghui Yu, Yong Li, and Depeng Jin (2018). An Improved Sampler for Bayesian Personalized Ranking by Leveraging View Data. In Proceedings of the 27th International Conference on World Wide Web (WWW 2018).
- [C16] Xin Xin, Fajie Yuan, Xiangnan He, and Joemon Jose. Batch IS NOT Heavy: Learning Word Embeddings From All Samples. In Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics (ACL 2018).
- [C17] Wenqiang Lei, Xisen Jin, Min-Yen Kan, Zhaochun Ren, Xiangnan He, and Dawei Yin. Sequicity: Simplifying Task-oriented Dialogue Systems with Single Sequence-to-Sequence Architectures. In Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics (ACL 2018).
- [C18] Jingyuan Chen*, Xiangnan He, Xuemeng Song, Hanwang Zhang, Liqiang Nie, and Tat-Seng Chua (2018). Venue Prediction for Social Images by Exploiting Rich Temporal Patterns in LBSNs. In Proceedings of the 24th International Conference on Multimedia Modeling (MMM 2018), pp. 327-339.
- [C19] Dongxiang Zhang, Long Guo, Xiangnan He, Jie Shao, Sai Wu, and Heng Tao Shen (2018). A Graph-Theoretic Fusion Framework for Unsupervised Entity Resolution. In Proceedings of the 34th IEEE International Conference on Data Engineering (ICDE 2018), to appear.
- [C20] Zan Gao, Yu Wang, Xiangnan He, and Hua Huang (2018). Group-pair Convolutional Neural Networks for Multi-view based 3D Object Retrieval. In Proceedings of the 22th AAAI Conference on Artificial Intelligence (AAAI 2018).
- [C21] Xiangnan He and Tat-Seng Chua (2017). Neural Factorization Machines for Sparse Predictive Analytics. In Proceedings of the 40th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2017), pp. 355-364.

- [C22] Xiang Wang*, Xiangnan He, Liqiang Nie, and Tat-Seng Chua (2017). Item Silk Road: Recommending Items from Information Domains to Social Users. In Proceedings of the 40th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2017), pp. 185-194.
- [C23] Da Cao*, Liqiang Nie, Xiangnan He, Xiaochi Wei, Shuizhi Zhu, Shunxiang Wu, Tat-Seng Chua (2017). Embedding Factorization Models for Jointly Recommending User Generated Lists and Their Contained Items. In Proceedings of the 40th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2017), pp. 585-594.
- [C24] Jingyuan Chen*, Hanwang Zhang, Xiangnan He, Liqiang Nie, Wei Liu, and Tat-Seng Chua (2017). Attentive Collaborative Filtering: Multimedia Recommendation with Component- and Item-Level Attention. In Proceedings of the 40th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2017), pp. 335-344.
- [C25] Xiangnan He, Lizi Liao, Hanwang Zhang, Liqiang Nie, Xia Hu, and Tat-Seng Chua (2017). Neural Collaborative Filtering. In Proceedings of the 26th International Conference on World Wide Web (WWW 2017), pp. 173-182.
- [C26] Immanuel Bayer, Xiangnan He, Bhargav Kanagal, and Steffen Rendle (2017). A Generic Coordinate Descent Framework for Learning from Implicit Feedback. In Proceedings of the 26th International Conference on World Wide Web (WWW 2017), pp. 1341-1350.
- [C27] Francesco Gelli*, Xiangnan He, Tao Chen, and Tat-Seng Chua (2017). How Personality Affects our Likes: Towards a Better Understanding of Actionable Images. In Proceedings of the 2017 ACM on Multimedia Conference (MM 2017), pp. 1828-1837.
- [C28] Liqiang Nie, Xiang Wang, Jianglong Zhang, Xiangnan He, Hanwang Zhang, Richang Hong, and Qi Tian (2017). Enhancing Micro-video Understanding by Harnessing External Sounds. In Proceedings of the 2017 ACM on Multimedia Conference (MM 2017), pp. 1192-1200.
- [C29] Zhenguang Liu, Li Cheng, Anan Liu, Luming Zhang, Xiangnan He, and Roger Zimmermann (2017). Multiview and Multimodal Pervasive Indoor Localization. In Proceedings of the 2017 ACM on Multimedia Conference (MM 2017), pp. 109-117.
- [C30] Dejing Xu, Zhou Zhao, Jun Xiao, Fei Wu, Hanwang Zhang, Xiangnan He, and Yueting Zhuang (2017). Video Question Answering via Gradually Refined Attention over Appearance and Motion. In Proceedings of the 2017 ACM on Multimedia Conference (MM 2017), pp. 1645-1653.
- [C31] Lizi Liao*, Xiangnan He, Zhaochun Ren, Liqiang Nie, Huan Xu, and Tat-Seng Chua (2017). Representativeness-aware Aspect Analysis for Brand Monitoring in Social Media. In Proceedings of the 26th International Joint Conference on Artificial Intelligence (IJCAI 2017), pp. 310-316.
- [C32] Jun Xiao, Hao Ye*, Xiangnan He, Hanwang Zhang, Fei Wu, and Tat-Seng Chua (2017). Attentional Factorization Machines: Learning the Weight of Feature Interactions via Attention Networks. In Proceedings of the 26th International Joint Conference on Artificial Intelligence (IJCAI 2017), pp. 3119-3125.
- [C33] Wenqiang Lei, Xuancong Wang, Meichun Liu, Ilija Ilievski, Xiangnan He, and Min-Yen Kan (2017). SWIM: A Simple Word Interaction Model for Implicit Discourse Relation Recognition. In Proceedings of the 26th International Joint Conference on Artificial Intelligence (IJCAI 2017), pp. 4026-4032.
- [C34] Xiangnan He, Hanwang Zhang, Min-Yen Kan, and Tat-Seng Chua (2016). Fast Matrix Factorization for Online Recommendation with Implicit Feedback. In Proceedings of the 39th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2016), pp. 549-558.
- [C35] Hanwang Zhang, Fumin Shen, Wei Liu, Xiangnan He, Huanbo Luan, and Tat-Seng Chua (2016). Discrete Collaborative Filtering. In Proceedings of the 39th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2016), pp. 325-334.
- [C36] Tao Chen, Xiangnan He, and Min-Yen Kan (2016). Context-aware Image Tweets Modelling and Recommendation. In Proceedings of the 2016 ACM on Multimedia Conference (MM 2016), pp. 1018-1027.
- [C37] Jianglong Zhang, Liqiang Nie, Xiang Wang, Xiangnan He, Xianglin Huang, and Tat-Seng Chua (2016). Shorter-is-Better: Venue Category Estimation from Micro-Video. In Proceedings of the 2016 ACM Conference on Multimedia Conference (MM 2016), pp. 1415-1424.

- [C38] Xiangnan He, Tao Chen, Min-Yen Kan, and Xiao Chen (2015). *TriRank: Review-aware Explainable Recommendation by Modeling Aspects*. In Proceedings of the 24th ACM International on Conference on Information and Knowledge Management (CIKM 2015), pp. 1661-1670.
- [C39] Tao Chen, Hany Salaheldeen, Xiangnan He, Min-Yen Kan, and Dongyuan Lu (2015). *VELDA:* Relating an Image Tweets Text and Images. In Proceedings of the 27th AAAI Conference on Artificial Intelligence (AAAI 2015), pp. 30-37.
- [C40] Xiao Chen, Min Liu, Yaqin Zhou, Shuang Chen, and Xiangnan He (2015). Differential Spread Strategy: an Incentive for Advertisement Dissemination. In IEEE Symposium on Computers and Communication (ISCC 2015), pp. 595–601.
- [C41] Xiangnan He, Ming Gao, Min-Yen Kan, Yiqun Liu, and Kazunari Sugiyama (2014). *Predicting the Popularity of Web 2.0 Items Based on User Comments*. In Proceedings of the 37th International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR 2014), pp. 233-243.
- [C42] Xiangnan He, Min-Yen Kan, Peichu Xie, and Xiao Chen (2014). Comment-based Multi-View Clustering of Web 2.0 Items. In Proceedings of the 23rd International Conference on World Wide Web (WWW 2014), pp. 771-782.
- [C43] Yiping Jin, Min-Yen Kan, Jun-Ping Ng, and Xiangnan He (2013). *Mining Scientific Terms and their Definitions: A Study of the ACL Anthology*. In Proceedings of the 2013 Conference on Empirical Methods in Natural Language Processing (EMNLP 2013), pp. 780-790.
- [C44] Ming Gao, Xiangnan He, Cheqing Jin, Xiaoling Wang, and Aoying Zhou (2010). *Recording How-Provenance on Probabilistic Databases*. In Proceedings of the 12th Asia-Pacific Web Conference (APWeb 2010), pp. 205-211.

INVITED TALKS

Neural Recommender Models: Moving from Shallow Learning to Deep Learning

- Singapore Management University, Singapore, April 2018
- Nanyang Technological University, Singapore, March 2018
- 6Estates Inc., Singapore, March 2018
- University of Science and Technology of China, Feb 2018.
- Tianjin University, China, Dec 2017.

Neural Factorization Machines for Sparse Predictive Analytics

- Hefei University of Technology, China, Sep 2017.
- Linksure Inc., Singapore, Jun 2017.

Cross-Modal Recommendation

- Schloss Dagstuhl, Germany, July 2017.

Neural Collaborative Filtering

- Shandong University, China, May 2017.

Recent Advance on Recommendation Methods for Implicit Feedback

- Tsinghua University, China, Apr 2017.
- Renmin University, China, Apr 2017.
- Chinese Academy of Sciences, China, Apr 2017.

Collaborative Filtering for Implicit Feedback

- Tsinghua University, China, Dec 2016.
- Zhejiang University, China, Dec 2016.
- Hefei University of Technology, China, Dec 2016.

Professional Services

Conference/Journal Organizer

- Guest Editor of Special Issue "Multimedia Recommendation and Multi-modal Data Analysis" at the Multimedia Systems Journal, 2018
- Workshop Co-chair of "Social Media Analytics for Smart Cities" at the ACM on Conference on Information and Knowledge Management, 2017

Program Committee Member

- ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR), 2018
- ACM International Conference on World Wide Web (WWW), 2018
- ACM Multimedia Conference (MM), 2018

- ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), 2018
- ACM Conference on Information and Knowledge Management (CIKM), 2018
- ACM International Conference on Web Search and Data Mining (WDSM), 2018
- The Annual Meeting of the Association for Computational Linguistics (ACL), 2018
- AAAI Conference on Artificial Intelligence (AAAI), 2018
- International Joint Conference on Artificial Intelligence (IJCAI), 2018
- The Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD), 2018
- The Asia Information Retrieval Societies Conference (AIRS), 2018
- China National Conference on Computational Linguistics (CCL), 2018
- SIGIR 2018 Workshop on ExplainAble Recommendation and Search (EARS), 2018
- WSDM 2018 Workshop on Multi-dimensional Information Fusion for User Modeling and Personalization (IFUP), 2018
- ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR), 2017
- ACM Multimedia Conference (MM), 2017
- ACM Conference on Information and Knowledge Management (CIKM), 2017
- China National Conference on Computational Linguistics (CCL), 2017
- CIKM 2017 Workshop on Social Media Analytics for Smart Cities (SMASC), 2017
- ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR), 2016
- ACM International Conference on World Wide Web (WWW), 2016
- The 2016 Conference on Empirical Methods on Natural Language Processing (EMNLP), 2016

Journal Reviewer

- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- ACM Transactions on Information Systems (TOIS)
- IEEE Transactions on Multimedia (TMM)
- ACM Transactions on Knowledge Discovery from Data (TKDD)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- KSII Transactions on Internet and Information Systems (TIIS)
- Journal of the Association for Information Science and Technology (JASIST)
- IEEE Access
- Journal of Computational Science (JOCS)
- Neurocomputing
- Frontiers of Computer Science (FOCS)
- World Wide Web Journal (WWWJ)
- Multimedia Systems Journal (MMSJ)
- Multimedia Tools and Applications (MTA)
- Data Science and Engineering (DSE)

Grants

PATENTS

Deep Learning for Recommender Systems, Co-PI

Apr 2018 – Oct 2019

Under Reviewing

The grant size is SGD 500,000, supported by AI.SG (100 Experiments).

Explainable Financial Predictive Analytics with Big Data, Co-PI

The grant size applied is SGD 500,000, supported by AI.SG (Fundamental Research).

The industrial partner is LinkSure Network Technology Co., Ltd.

Neural Factorization Machines for Predictive Analytics

Authors: Xiangnan He and Tat-Seng Chua

Date of filed: May 2017, Efiling Number: E201705190502P

Attentional Factorization Machines: Learning the Weight of Feature Interactions via Attention Networks

Authors: Xiangnan He, Hanwang Zhang, and Tat-Seng Chua Date of filed: May 2017, Efiling Number: E201705190406S Referees

Tat-Seng Chua,

KITHCT Chair Professor

School of Computing, National University of Singapore AS6 #05-08, 13 Computing Drive, Singapore 117417

Email: chuats@comp.nus.edu.sg Phone: (+65) 6416-2505

W. Bruce Croft,

 $Distinguished\ Professor$

ACM Fellow

College of Information and Computer Sciences, University of Massachusetts Amherst

140 Governors Drive, Box 9264, Amherst, MA 01003-9264

Email: croft@cs.umass.edu Phone: (+1) 413-545-0463

Hang Li,

Director of Toutiao AI Lab

IEEE Fellow, ACM Distinguished Scientist

Toutiao (Beijing Bytedance Technology)

Zhonghang Plaza, No. 43. Third Ring West Road, Beijing, China Beijing, China 100190

Email: lihang.lh@bytedance.com Phone: (+86)-13601285976

Min-Yen Kan,

 $Associate\ Professor$

School of Computing, National University of Singapore

AS6 #05-12, 13 Computing Drive, Singapore 117417

Email: kanmy@comp.nus.edu.sg Phone: (+65) 6516-1885