Weichen Wang

http://www.cs.dartmouth.edu/~we-wang/

CONTACT INFORMATION	6211 Sudikoff Lab Hanover, NH 03755 weichen.wang.gr@dartmouth.edu

EDUCATION

Dartmouth College, Hanover, NH, USA

Ph.D., Computer Science, *Expected:* Summer 2021
- Advisor: Andrew Campbell, Ph.D

Waseda University, Kitakyushu, Japan

M.E., Graduate School of Information, Production and Systems, Sept 2012
- Advisor: Satoshi Goto, Ph.D

Nanjing University, Nanjing, China

B.E., Software Engineering, Jun 2010

WORKING EXPERIENCE

Works Applications, DevOps Engineer, Tokyo, Japan   2014-2015

WorksApp is the top Enterprise Resource Planning Solution company in Japan founded in 1996. The Human Resource suite has over 50% market share (No.1 in Japan), being widely used in all industries such as manufacturing, building, distribution, transportation, service, finance, public utility business, etc.

- Was in charge of the payroll accounting subsystem of the HR suite, as a DevOps engineer. Mastered the technical details of the complex and old-fashioned system (UI: Delhpi with Object Pascal; backend: COBOL scripts) from zero within 2 weeks and then started to provide technique support to all customers. Debugged and corrected the system if any problem was found.
- In the meanwhile, participated in migrating the Delhpi + COBOL systems to HTML + Java ones which was a major task in the company at that moment.

KLab, Software Engineer, Tokyo, Japan   2012-2014

KLab is a star mobile game developer in Japan. I joined KLab in 2012 - the year when smart phone games started to boom in Japan.

- Developed backend services for smart phone games such as Age of Empires - a smartphone based real-time strategy game licensed through Microsoft Corporation.
- Guided junior members in building the web-based content management systems to monitor and analyze the user activities.
- Explored the best way to integrate popular developing frameworks into mobile game backend systems, from the CakePHP to Flask Python.

RESEARCH INTERESTS

Ubiquitous computing, mobile sensing applied machine learning, human behavioral modeling, mobile health and data mining

RESEARCH ACTIVITIES

My research area focuses on human behavioral modeling based on sensing data from smartphones. I am leading multiple NSF/NIH mobile sensing projects at Dartmouth College. Until now, more than 300 students at Dartmouth have participated various studies using my iOS/Android apps. I am currently also running another study in which 400 patients who suffer from audio hallucinations will use my Android app to sense their daily life (until now there are around 100 enrolled). I also built a website to enroll the participants from all over the US and there are about 900 registered users up to now (so about 1/9 consented to participate, passed the screening and installed the app). Generally speaking, my daily research activity include:

Design and implementation of mobile sensing systems, which collects sensing data such as activity, audio, location phone usage from smartphones.

including
- developing apps on iOS (Objective C).
- developing apps on Android (Java).
- developing backend server which supports the apps, executes daily data analyzing pipelines and performs other tasks such as detecting suspicious participants (Python, Shell).
- developing recruiting website to screen participants and distribute apps (HTML, CSS, Javascript, Flask).
- developing content management system which visualizes the human-centered data and track users' compliance (Python, Shell).

Human behavioral modeling using data from mobile systems, which involves
- designing and computing features on the basis of raw sensing data.
- data analysis and mobile sensing applied machine learning.
- collaborating with experts in psychology, mental health and brain science and publishing papers in Ubiquitous computing areas.

I've published three papers in IMWUT(Ubicomp), one of the top conference in ubiquitous computer area.

RESEARCH PROJECTS PARTICIPATED IN

Mobile RDoC NIH Project: Using Smartphone Technology to Understand Auditory Verbal Hallucinations
2017-

Use integrated mobile data collection techniques (Ecological Momentary Assessment for self-report and automated multi-modal sensing to capture behavior) to study Auditory Verbal Hallucinations experience and associated behaviors, as they occur in real-time/real-place in people with and without need for care.

NIH Project: Functional Anatomic Studies of Self-Affect
2017-

The study will follow a large cohort of participants over their four years of college to assess how changes in self-affect are predicted by relevant brain networks as well as how those networks change over time.

StudentLife
2015-2017

Use computational methods and machine learning algorithms on the phone to assess sensor data and make higher level inferences (i.e., sleep, sociability, activity, etc.) Monitor students' mental well-being and performance using mobile sensing technologies.

EUREKA NIH project: A New Paradigm for Illness Monitoring and Relapse Prevention in Schizophrenia.
2015-2017

The goal of the proposed project is to develop and evaluate a novel paradigm for illness monitoring, detection of early warning signs, and relapse prevention in schizophrenia. Develop a mobile system that uses smartphone-embedded sensors (i.e. microphone, accelerometer, GPS, light sensor) coupled with computerized self-reports, to track a range of behaviors (i.e. paralinguistic aspect of speech, physical activity, location, sleep, mood, psychotic symptoms) that are relevant to relapse in schizophrenia. Using machine learning techniques, the system will leverage behavioral data and patient self-reported clinical updates to generate personalized early warning models.

NSF project: An Automated Technology-Based Personality Classifier.
2016-2017

Use smartphones to automatically and unobtrusively measure personality as it is expressed in daily life. First, the team collect large-scale objective records of how behavior unfolds in the context of everyday life, allowing researchers to learn what kinds of behavior tend to co-occur in every life and what kinds of temporal patterns they follow. Second, the data will be used to generate an unobtrusive automated method for measuring personality via smartphones in everyday lives.

COURSES PROJECTS	Here I selected two most interesting course projects I've done during the study at Dartmouth.

Yanix <div align="right">Sep 2016 – Nov 2016</div>

- Designing and developing a Unix-style kernel system in C on a simulated hardware running on top of a Linux machine, including memory management, multitask scheduling, syscalls, interruption handler, and context switching.

Intersection <div align="right">Jan 2016 – Feb 2016</div>

- Intersection is an Android Mobile and Watch app aiming at extending users' social network targetedly. It consists of smartphone-end, smartwatch-end and server-end. The app on smartphone and smartwatch can collect users' daily behavioral data. The data are synced with server, which analyses the data and make matches between users based on the features of daily routine. The smartwatches vibrate simultaneously when two matched uses come across. In this project I designed the MVC of this system and designed users' workflow. I also implemented all the functions on the server side, such as extracting data of real-time GPS location (with Google Maps API) and analyzing daily routines, hobbies and calculating similarities.

AWARDS

Travel Awards
- Ubicomp 2017, Maui, HI <div align="right">Sept 2017</div>
- Mobisys 2017, Niagara Falls, NY <div align="right">Jun 2017</div>

Student Awards — Japanese Government
- Honors Scholarship for Privately-Financed International Students <div align="right">2011-2012</div>

Student Awards — Waseda University
- The Highest Tuition Fee Reduction Scholarship for Privately Financed Overseas Students <div align="right">2011-2012</div>
- IPS Special Scholarship of Waseda University <div align="right">2010-2011</div>

Software Design Competition Awards
- 3rd Place in the 6th Software Design Competition in Nanjing University <div align="right">Dec 2008</div>
- 2nd Place in Microsoft Tech Club Software Design Tournament in Nanjing <div align="right">Dec 2008</div>

Student Awards — Nanjing University
- 2nd Grade Scholarship for Competitions <div align="right">Nov 2009</div>
- Tung OOCL Scholarship <div align="right">2008–2009</div>
- 1st Grade Scholarship of Nanjing University <div align="right">2007-2008</div>
- 1st Grade Scholarship of Nanjing University <div align="right">2006-2007</div>

PUBLICATIONS

1. **Weichen Wang**, Gabriella M. Harari, Rui Wang, Sandrine R. Müller, Shayan Mirjafari, Kizito Masaba and Andrew T. Campbell. Sensing Behavioral Change Over Time: Using Within-Person Variability Features from Mobile Sensing to Predict Personality Traits. *To appear in Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies. To be presented at ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp), Singapore, September 2018.*

2. Rui Wang, **Weichen Wang**, Alex daSilva, Jeremy F. Huckins, William M. Kelley, Todd F. Heatherton, and Andrew T. Campbell. Tracking Depression Dynamics in College Students Using Mobile Phone and Wearable Sensing. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) Volume 2 Issue 1, March 2018, Article No. 43.*

3. Huckins, Jeremy F., Rui Wang, **Weichen Wang**, Elin L. Hedlund, Eilis I. Murphy, Richard B. Lopez, Courtney Rogers et al. Fusing Mobile Phone Sensing and Brain

Imaging to Assess Depression in College Students: A Proof-of-Concept study. *bioRxiv (2018): 276568.*

4. Rui Wang, **Weichen Wang**, Min Hane Aung, Dror Ben-Zeev, Rachel Brian, Andrew Campbell, Tanzeem Choudhury, Marta Hauser, John Kane, Emily Scherer, Megan Walsh. Predicting Symptom Trajectories of Schizophrenia using Mobile Sensing. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) Volume 1 Issue 3, September 2017, Article No. 110. Presented at ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp), Maui, Sept. 2017.*

5. Gabriella M. Harari, **Weichen Wang**, Sandrine R. Müller, Rui Wang, Andrew T. Campbell. Participants' compliance and experiences with self-tracking using a smartphone sensing app. *In Proceedings of the 2017 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp) and Proceedings of the 2017 ACM International Symposium on Wearable Computers, pp. 57-60. ACM, 2017.*

6. Dror Ben-Zeev, Rachel Brian, Rui Wang, **Weichen Wang**, Andrew T. Campbell, Min SH Aung, Michael Merrill et al. CrossCheck: Integrating Self-Report, Behavioral Sensing, and Smartphone Use to Identify Digital Indicators of Psychotic Relapse. *Psychiatric rehabilitation journal 40, no. 3 (2017): 266.*

7. Wenxin Yu, **Weichen Wang**, Jiu Xu, Liang Yu. Frame Compatible Format Fast Encoder with Stereo Matching. *In Circuits and Systems (ISCAS), 2015 IEEE International Symposium on, pp. 2529-2532. IEEE, 2015.*

8. Wenxin Yu, **Weichen Wang**, Gang He, Satoshi Goto. Combined Hole-Filling with Spatial and Temporal Prediction. *In Image Processing (ICIP), 2013 20th IEEE International Conference on, pp. 3196-3200, IEEE, 2013.*

9. Wenxin Yu, **Weichen Wang**, Zhengyan Guo and Satoshi Goto. An Integrated Hole-filling Algorithm for View Synthesis. *IEICE Transactions on Fundamentals of Electronics, Communications and Computer Sciences 96, no. 6 (2013): 1306-1314.*

10. Wenxin Yu, **Weichen Wang**, Zhengyan Guo and Satoshi Goto. An Integrated Hole-Filling Algorithm for View Synthesis. *In Advances in Multimedia Information Processing, PCM 2012: 13th Pacific-Rim Conference on Multimedia, Singapore, December 4-6, 2012, Proceedings, vol. 7674, p. 80. Springer, 2013.*

11. **Weichen Wang**, Satoshi Goto. Stereo Matching with Pixel Classification and Reliable Disparity Propagation. *In Circuits and Systems (ISCAS), 2012 IEEE International Symposium on, pp. 1891-1894, IEEE, 2012.*

CONFERENCE
TALKS

1. Müller, S. R., Harari G. M., **Wang, W.**, Mehrotra, A. Rentfrow, P. J., & Gosling, S. D. (2018, July). Exploring the psychological characteristics associated with GPS-based measures of physical mobility. *Talk accepted at the European Conference on Psychology, Zadar, Croatia.*

2. Harari, G. M., Müller, S. R., Wang, R., **Wang, W.**, Campbell, A. T., Rentfrow, P. J., & Gosling, S.D. (2018, May). Daily Socializing Behaviors of Young Adults: An Analysis of In-Person Conversations, Calling, and Texting Patterns. *Talk accepted at the Annual International Communication Association Conference, Prague, Czech Republic.*

3. Müller, S. R., Harari G. M., **Wang, W.**, Mehrotra, A. Rentfrow, P. J., & Gosling, S. D. (2018, May). Exploring the Health Characteristics Associated with GPS-Based Measures of Human Mobility. *Talk accepted at the Annual Convention of the Association for Psychological Science, San Francisco, California.*

4. Müller, S. R., Harari G. M., **Wang, W.**, Mehrotra, A. Rentfrow, P. J., & Gosling, S. D. (2018, March). Exploring the psychological characteristics associated with GPS-based measures of physical mobility. *Talk accepted at the Media and Technology Preconference at the Society for Personality and Social Psychology Annual Convention, Atlanta, Georgia.*

5. Müller, S. R., Harari, G. M., **Wang, W.**, Mehrotra, A., Rentfrow, P. J., & Gosling, S.D. (2018, June). Exploring the psychological characteristics associated with GPS-based measures of physical mobility. *Talk submitted to the SPSSI-EASP-Small Group Meeting: Mapping Space/Place and Psychology, Pittsburgh, Pennsylvania.*

6. Jialing Wu, **Weichen Wang**. Research on Japan's Mobile Social-gaming Industry. *2014 International Conference on Digital Future and Mediated Society: Digital Media and Cultural Communication. May. 2014*

TEACHING

Teaching Assistant of Operating Systems, 18 fall. (This course is said to be *the most difficult CS course* at Dartmouth)

LANGUAGES

- Chinese (Native)
- English (Fluent)
- Japanese (Fluent)

SKILLS

Java, Python, C, iOS (Objective-C), Android, HTML, CSS, Javascript, Shell, Linux, SQL, R, Matlab