

Sharath Chandra Guntuku

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Education

Nanyang Technological University (NTU)

Ph.D., Computer Science, GPA – 4.7/5.0

Advisor: Lin Weisi, PhD

Thesis: Modeling User Factors in Multimedia Preferences

Singapore

2013 - 2017

Birla Institute of Technology & Science (BITS) - Pilani

B.E. (Hons), Computer Science, GPA – 8.99/10.0

Advisor: Chittaranjan Hota, PhD

Thesis: Detecting Security Threats in P2P Networks using Machine Learning

India

2009 - 2013

Professional Appointments

Research Scientist

Center for Digital Health

University of Pennsylvania, U.S.A

Sep 2018 – now

Postdoctoral Researcher

Center for Digital Health

Apr 2017 – Aug 2018

Visiting Scholar

World Well-Being Project

Aug 2016 – Mar 2017

Research Intern

Deep Learning for 3D Face Recognition

Panasonic R&D, Singapore

Jan – Jun 2016

Grants & Fellowships

NIH NHLBI

(Key Personnel, \$3,500,000), PI: Raina Merchant

2018-2022

Penn China Research and Engagement Fund

(Key Personnel, \$100,000), PI: Lyle Ungar

2020-2021

Once Upon A Time Foundation

(Lead Computer Scientist, \$1,000,000), PI: Raina Merchant

2018-2020

Nanyang Technological University Graduate Research Scholarship

(\$88,100)

2013-2017

Nanyang Engineering Doctoral Fellowship

(\$4,410)

2013-2014

Research Interests and Technical Skills

- **Research Interests:** Digital Phenotyping, Mental Health, Natural Language Processing, Multimedia Computing, Machine Learning, Psychology & Health
- **Programming Languages:** Python, R, Matlab.
- **Tools:** Caffe, Pandas, Weka, SPSS, AutoCAD, Minitab, WireShark.

Publications

[Google Scholar] Current citations: 680; i10-index: 19; h-index: 14

Book Chapters

1. Interactive Data Visualization with Python: Present your data as an effective and compelling story, Packt Publishing, ISBN-13: 978-1838648350 ISBN-10: 1838648, 2019

Refereed Journal Articles

19. **Guntuku S.C.**, Schneider R.C, Pelullo A., Young J.F, Wong V., Ungar L.H, Polsky D., Volpp K., & Merchant R.M. *“Characterizing and Measuring Expressions of Loneliness in Individuals using Twitter”* BMJ Open, In Press
18. Seltzer E., Goldshear J., **Guntuku S.C.***, Grande D., Asch D., Klinger E.V., Merchant R.M, (2019, in press) *“Patients’ willingness to share digital health and non-health data for research”* BMC Medical Informatics and Decision Making (* – corresponding author)
17. Merchant, R. M., Asch, D. A., Crutchley, P., Ungar, L. H., **Guntuku, S. C.**, Eichstaedt, J. C., Hill, S., Padrez, K., Smith, R. J., & Schwartz, H. A. (2019, in press). *“Evaluating the Predictability of Medical Conditions from Social Media Posts.* PLoS One.
16. Agarwal A.K., Wong V., Pelullo A., **Guntuku S.C.**, Polsky D., Asch D.A., Muruako J., & Merchant R.M., *“Online Reviews of Specialized Drug Treatment Facilities – Identifying potential drivers of high and low patient satisfaction”*. Journal of General Internal Medicine. 2019
15. Yang, Q., Tufts, C., Ungar, L., **Guntuku, S.C.**, & Merchant, R. (2018). *“To retweet or not to retweet: Understanding what features of cardiovascular tweets influence their retransmission.* Journal of health communication, 23(12), 1026-1035.
14. Samani, Z. R., **Guntuku, S. C.**, Moghaddam, M. E., Preotiuc-Pietro, D., & Ungar, L. H. (2018). *“Cross-platform and cross-interaction study of user personality based on images on Twitter and Flickr.* PloS one, 13(7), e0198660. [Link]
13. Jakhetiya, V., Gu, K., Singhal, T., **Guntuku, S. C.**, Xia, Z., & Lin, W. (2018). *“A Highly Efficient Blind Image Quality Assessment Metric of 3D-Synthesized Images using Outlier Detection.* IEEE Transactions on Industrial Informatics.
12. Zhu, Y., **Guntuku, S. C.**, Lin, W., Ghinea, G., & Redi, J. A. (2018). *“Measuring Individual Video QoE: A Survey, and Proposal for Future Directions Using Social Media.* ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM), 14(2s), 30. [PDF]

11. Jakhetiya, V., Lin, W., Jaiswal, S., Gu, K., & **Guntuku, S. C.** (2018). *"Just Noticeable Difference for natural images using RMS contrast and feed-back mechanism"*. *Neurocomputing*, 275, 366-376. [PDF]
10. **Guntuku, S. C.**, Ramsay, J. R., Merchant, R. M., & Ungar, L. H. (2017). *"Language of ADHD in adults on social media"*. *Journal of attention disorders*, 1087054717738083. [PDF]
9. **Guntuku, S. C.**, Yaden, D. B., Kern, M. L., Ungar, L. H., & Eichstaedt, J. C. (2017). *"Detecting depression and mental illness on social media: an integrative review"*. *Current Opinion in Behavioral Sciences*, 18, 43-49. [PDF]
8. Jakhetiya, V., Lin, W., Jaiswal, S. P., **Guntuku, S. C.**, & Au, O. C. (2017). *"Maximum a posterior and perceptually motivated reconstruction algorithm: A generic framework"*. *IEEE Transactions on Multimedia*, 19(1), 93-106. [PDF]
7. Prakhya, S. M., Liu, B., Lin, W., Jakhetiya, V., & **Guntuku, S. C.** (2017). *"B-SHOT: a binary 3D feature descriptor for fast Keypoint matching on 3D point clouds"*. *Autonomous Robots*, 41(7), 1501-1520.
6. **Guntuku, S. C.**, Zhou, J. T., Roy, S., Lin, W., & Tsang, I. W. (2016). *"Understanding deep representations learned in modeling users likes"*. *IEEE Transactions on Image Processing*, 25(8), 3762-3774. [PDF]
5. **Guntuku, S.C.**, Zhou, J., Roy, S., Lin, W., & Tsang, W. (2016). *"Who likes What, and Why? Insights into Personality Modeling based on Image Likes"*. *IEEE Transactions on Affective Computing*. [PDF]
4. Scott, M. J.*, **Guntuku, S. C.***, Lin, W., & Ghinea, G. (2016). *"Do personality and culture influence perceived video quality and enjoyment?"*. *IEEE Transactions on Multimedia*, 18(9), 1796-1807. (* – denotes equal contribution) [PDF]
3. Singh, K.*, **Guntuku, S. C.***, Thakur, A., & Hota, C. (2014). *"Big data analytics framework for peer-to-peer botnet detection using random forests"*. *Information Sciences*, 278, 488-497. (* – denotes equal contribution) [PDF]
2. Desu, R. K., **Guntuku, S. C.**, Aditya, B., & Gupta, A. K. (2014). *"Support vector regression based flow stress prediction in austenitic stainless steel 304"*. *Procedia materials science*, 6, 368-375. [PDF]
1. Gupta, A. K., **Guntuku, S. C.**, Desu, R. K., & Balu, A. (2015). *"Optimisation of turning parameters by integrating genetic algorithm with support vector regression and artificial neural networks"*. *The International Journal of Advanced Manufacturing Technology*, 77(1-4), 331-339. [PDF]

Refereed Conferences

22. **Guntuku, S. C.**, Buffone, A., Jaidka, K., Eichstaedt, J.C., & Ungar, L. (2019). *"Understanding and Measuring Psychological Stress using Social Media"*. In *AAAI Conference on Web and Social Media (ICWSM)*. (Acceptance rate: 17%)

21. **Guntuku, S. C.**, Preotiuc-Pietro, D., Eichstaedt, J. C. & Ungar, L. H. (2019). *"What Twitter Profile and Posted Images Reveal about Depression and Anxiety"*. In AAAI Conference on Web and Social Media (ICWSM). (Acceptance rate: 17%)
20. **Guntuku, S. C.**, Li, M., Tay, L. & Ungar, L. H. (2019). *"Studying Cultural Differences in Emoji Usage across the East and the West"*. In AAAI Conference on Web and Social Media (ICWSM). (Acceptance rate: 17%)
19. Liu, T., Nicholas, J., Theilig, M., **Guntuku, S.C.**, Kording, K., Mohr, D.C., Ungar, L. (2019) *"Machine Learning for Phone-Based Relationship Estimation: The Need to Consider Population Heterogeneity"*. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies
18. Li, M., **Guntuku, S. C.**, Jakhetiya, V. & Ungar, L. H. *"Exploring (Dis-)Similarities in Emoji-Emotion Association on Twitter and Weibo"*, 2019, EMOJI2019 colocated with The WebConf
17. Matero, M., Idnani, A., Son, Y., Giorgi, S., Vu, H., Zamani, M., Limbachiya, P., **Guntuku, S.C.** and Schwartz, H.A., 2019, June. *"Suicide risk assessment with multi-level dual-context language and bert"*. In Proceedings of the Sixth Workshop on Computational Linguistics and Clinical Psychology (pp. 39-44).
16. Jaiswal, S.P, Jakhetiya, V., Gu, K., **Guntuku, S.C**, Singla, A., *"Frequency-Domain Analysis Based Exploitation Of Color Channels For Color Image Demosaicking"*. 2019 IEEE Visual Communications and Image Processing (VCIP)
15. **Guntuku, S. C.**, Giorgi, S., & Ungar, L. (2018, June). *"Current and Future Psychological Health Prediction using Language and Socio-Demographics of Children for the CLPsych 2018 Shared Task"*. In Proceedings of the Fifth Workshop on Computational Linguistics and Clinical Psychology: From Keyboard to Clinic (pp. 98-106). [PDF]
14. Jaidka, K., **Guntuku, S. C.**, & Ungar, L. H. (2018, June). *"Facebook versus Twitter: Differences in Self-Disclosure and Trait Prediction"*. In Twelfth International AAAI Conference on Web and Social Media. [PDF] (Acceptance rate: 16%)
13. **Guntuku, S. C.**, Lin, W., Carpenter, J., Ng, W. K., Ungar, L. H., & Preotiuc-Pietro, D. (2017, June). *"Studying personality through the content of posted and liked images on Twitter"*. In Proceedings of the 2017 ACM on web science conference (pp. 223-227). ACM. [PDF] (Acceptance rate: 25%)
12. Preotiuc-Pietro, D., **Guntuku, S. C.**, & Ungar, L. (2017, September). *"Controlling human perception of basic user traits"*. In Proceedings of the 2017 conference on empirical methods in natural language processing (pp. 2335-2341). [PDF] (Acceptance rate: 25%)
11. Roy, S., & **Guntuku, S. C.** (2016, September). *"Latent factor representations for cold-start video recommendation"*. In Proceedings of the 10th ACM Conference on Recommender Systems (pp. 99-106). ACM. [PDF] (Acceptance rate: 18%)
10. **Guntuku, S. C.**, Roy, S., Lin, W., Ng, K., Keong, N. W., & Jakhetiya, V. (2016, June). *"Personalizing User Interfaces for improving quality of experience in VoD recommender systems"*. In 2016 Eighth International Conference on Quality of Multimedia Experience (QoMEX) (pp. 1-6). IEEE. [PDF]

9. **Guntuku, S. C.**, Qiu, L., Roy, S., Lin, W., & Jakhetiya, V. (2015, October). *"Do others perceive you as you want them to? Modeling personality based on selfies"*. In Proceedings of the 1st international workshop on affect & sentiment in multimedia (pp. 21-26). ACM. [PDF]
8. Scott, M. J.*, **Guntuku, S. C.***, Huan, Y., Lin, W., & Ghinea, G. (2015, October). *"Modelling human factors in perceptual multimedia quality: On the role of personality and culture"*. In Proceedings of the 23rd ACM international conference on Multimedia (pp. 481-490). ACM. (* – denotes equal contribution) [PDF] (Acceptance rate: 22%)
7. **Guntuku, S. C.**, Lin, W., Scott, M. J., & Ghinea, G. (2015, September). *"Modelling the influence of personality and culture on affect and enjoyment in multimedia"*. In 2015 International Conference on Affective Computing and Intelligent Interaction (ACII) (pp. 236-242). IEEE. [PDF] (Acceptance Rate: 28%)
6. Jakhetiya, V., Lin, W., Jaiswal, S. P., Tiwari, A. K., & **Guntuku, S. C.** (2015, July). *"Observation model based perceptually motivated bilateral filter for image reconstruction"*. In 2015 IEEE International Conference on Digital Signal Processing (DSP) (pp. 201-205). IEEE.
5. **Guntuku, S. C.**, Roy, S., & Weisi, L. (2015, June). *"Evaluating visual and textual features for predicting user likes"*. In 2015 IEEE International Conference on Multimedia and Expo (ICME) (pp. 1-6). IEEE. [PDF] (Acceptance rate: 30%)
4. **Guntuku, S. C.**, Scott, M. J., Yang, H., Ghinea, G., & Lin, W. (2015, May). *"The CP-QAE-I: A video dataset for exploring the effect of personality and culture on perceived quality and affect in multimedia"*. In 2015 Seventh International Workshop on Quality of Multimedia Experience (QoMEX) (pp. 1-7). IEEE. [PDF]
3. **Guntuku, S. C.**, Roy, S., & Weisi, L. (2015, January). *"Personality modeling based image recommendation"*. In International Conference on Multimedia Modeling (pp. 171-182). Springer, Cham. [PDF] (Acceptance Rate: 36%)
2. **Guntuku, S. C.**, Zhou, J. T., Roy, S., Weisi, L., & Tsang, I. W. (2014, November). *"Deep representations to model user likes"*. In Asian Conference on Computer Vision (pp. 3-18). Springer, Cham. [PDF] (Acceptance Rate: 3.9% Oral)
1. **Guntuku, S. C.**, Narang, P., & Hota, C. (2013). *"Real-time peer-to-peer botnet detection framework based on bayesian regularized neural network"*. IEEE P2P, 2013 (Short Paper) [PDF]

Manuscripts under Review

7. **Guntuku S.C.**, Schwartz H.A., Gaulton J., Asch D., Kashyap A., Ungar L.H., Merchant R.M *"Social Media Posts can Predict Inpatient and Emergency Room Visits"*
6. Li, M., **Guntuku, S. C.**, Hickman, L., Tay, L. & Ungar, L. H. *"Studying Politeness across Cultures using English Twitter and Mandarin Weibo"*
5. **Guntuku S.C.**, Klinger E., Ungar L., Asch D., Merchant R., *"Social media usage by healthcare super-utilizers reveals potential opportunity for online social support"*
4. **Guntuku S.C.**, Agarwal S., Ungar L.H. *"Studying Quarterlife-crisis using language on Twitter"*

3. Seltzer E., Lanza A., **Guntuku S.C.**, Tufts C., Srinivas S., Klinger E., Asch D., Fausti N., Ungar L., Merchant R., *"Patient Experience and Satisfaction in Online Reviews of Obstetric Care"*
2. Southwick L., Merchant R., **Guntuku S.C.**, *"Social Media: A Vital Sign for Understanding Behaviors around Death?"*
1. **Guntuku S.C.**, Gaulton J., Seltzer E., Asch D., Srinivas S., Ungar L., Klinger E., Merchant R., *"Social media posts predict pregnancy status, trimester, and parity"*

Manuscripts under Preparation

3. **Guntuku S.C.**, Schneider R., Andy A., Merchant R., *"Effects of Loneliness on Hospital Utilization"*
2. **Guntuku S.C.**, Fan A., Talhelm T., Giorgi S., Ungar L.H. *"Studying Cultural Differences using Social Media"*
1. Eichstaedt, J. C., **Guntuku, S.C.**, Schwartz, H.A., Yaden, D., Ungar, L. H., Seligman, M. E. P. *"The Language of Depression on Facebook"*.

Talks and Presentations

- **Panel Chair: Promise, challenges, and risks of digital data in mental health research and care**, American Medical Informatics Association Annual Symposium, Washington DC, 2019
- **Session Chair: Using Digital Data to Measure and Understand Mental Health and Well-Being**, American Psychological Association Technology, Mind and Society Conference (APA Tech), Washington DC, 2019
- **Using Social Media to Inform Healthcare**, Informatics Day, Institute of Biomedical Informatics, UPenn, May, 2019
- **Studying Cultural Differences using Language**, Behavioral Insights from Text Conference, Wharton School, January, 2019
- **Leveraging Social and Electronic Communications in Evaluation and Treatment**, Technology in Psychiatry Summit (McLean and Harvard Med. School), Boston, November, 2018
- **Session Chair: Using Social Media to measure Psychological Health and Illness: From Individuals to Communities** American Psychological Association Technology, Mind and Society Conference (APA Tech), Washington DC, April, 2018
- **Assessing ADHD from Tweets**, Society for Personality and Social Psychology (SPSP), Atlanta GA, March, 2018
- **Studying Personality through the Content of Posted and Liked Images on Twitter**, ACM Web Science, Troy NY, June, 2017
- **Studying Personality through Selfies**, University of Pennsylvania, Philadelphia PA, 2016
- **Modelling Human Factors in Perceptual Multimedia Quality: On The Role of Personality and Culture**, ACM Multimedia, Brisbane Australia, Oct, 2015
- **Deep Representations to Model User 'Likes'**, University Cultural Center, National University of Singapore, 2014.
- **Putting a Satellite in Moon's Orbit: Present and Future Propulsion Systems**, Aeronautical Society of India, 2007.

- **Aryabhata to Chandrayaan - India's Space Journey**, Defence Research and Development Laboratory, 2006.

Awards

- **Intel Invent50**, Finalist team (among 150 submissions) Personalized tourist hotspot recommender system, 2015
- **ACM Travel Grant**, to present at ACM Multimedia, Brisbane 2015
- **Nominated for Microsoft Research Asia Fellowship**, 1 student in the department, Nanyang Technological University, Singapore, 2015
- **Merit Scholarship**, Defence Research and Development Organization, India, 2010 & 2011
- **All India Rank 3 in National Cyber Olympiad**, India, 2007
- **Merit Certification for 100% score in IT**, Central Board of Secondary Education, India, 2007
- **Rank 1 in State and 7 in India for Aerospace Olympiad**, Aeronautical Society of India, 2007

Service to Profession

Reviewer for

- JAMA Network Open
- IEEE Transactions on Image Processing
- IEEE Transactions on Multimedia
- EPJ Data Science
- ACM Conference on Computer Supported Cooperative Work
- AAAI Conference on Web and Social Media (ICWSM)
- American Medical Informatics Association Annual Symposium
- APA Technology, Mind & Society
- AMIA Applied Clinical Informatics
- International Conference on Acoustics, Speech, and Signal Processing
- International Conference on Image Processing
- PLoS One
- The Social Science Journal
- International Journal of Environmental Research and Public Health
- IEEE Transactions on Medical Imaging
- Journal of Clinical Medicine
- Society for Personality and Social Psychology Annual Symposium

University Service

- Member of Search Committee for Postdoctoral Fellows in Psychology, University of Pennsylvania, 2016, 2017, 2019
- Member of Search Committee for Data Scientist in Digital Health, University of Pennsylvania, 2016, 2017, 2018, 2019

Media Coverage

- **The Atlantic**: What Your Facebook Posts Say About Your Mental Health [Link]
- **The Times of India**: Twitter posts can reveal how lonely you are, says study [Link]

- **The Inquirer:** Twitter photos may help detect users with depression, anxiety [Link]
- **Penn Today** Cross-cultural similarities and differences in emoji usage [Link]
- **KYW Radio:** Social media pictures can show a lot more about your health than expected [Link]
- **Tech Times:** Twitter Users With Depression And Anxiety Tend To Post Grayscale And Low-Aesthetic Images [Link]
- **NBC News:** Mood-forecasting tech could help stop bad moods even before they strike [Link]
- **American Psychological Association,** Speaking of Psychology: Twitter and ADHD. [Link]
- **Canadian Broadcasting Corporation:** Data collection by #Facebook and other companies on OnTheMoneyCBC. [Link]
- **Mashable:** Psychographic profiling of your likes and dislikes isn't new, and it's not going away [Link]
- **Psychiatric Times:** What Twitter and Brain Imaging Reveal About ADHD. [Link]
- **Faster than Normal (#1 ADHD podcast on iTunes):** ADHD Twitter Scientist. [Link]
- **Danish Politiken:** Technology and social media can be used to detect people with depression [Link]
- **The Conversation:** Social media can be bad for youth mental health, but there are ways it can help. [Link]
- **US News:** Can Social Media Help Improve ADHD Treatments? [Link]
- **Penn Current:** Tweets reveal emotions, behavior patterns of people who suffer from ADHD [Link]

Professional Affiliations

- Association for the Advancement of Artificial Intelligence
- Society for Social and Personality Psychology
- Association for Computing Machinery
- Institute of Electrical and Electronics Engineers

Teaching Assistance

- CE1005 Digital Logic, NTU Singapore
- CE9001 Java and Internet, NTU Singapore

Advising and Mentoring

- Mingyang Li, M.S. Data Science (Thesis), UPenn → Google
- Shantenu Agarwal, M.S. Bioengineering (Thesis), UPenn → Soul Machines
- Agrima Seth, M.S. Computer Science (Thesis), UPenn → Morgan Stanley
- Xiang Cui, M.S. Computer Science, UPenn
- Zeshen, M.S. Computer Science, UPenn
- He Chen, B.S. Computer Science, UPenn → Amazon Robotics
- Swathi Rajanna, M.S. Computer Science, UPenn → Microsoft
- Yogitha Chilukuri, M.S. Computer Science, UPenn → Adobe
- Angel Fan, B.S. Computer Science, UPenn
- Qingrong Ji, B.S. Computer Science, UPenn
- Harish Tata, B.E. Computer Science, GITAM → M.S. UMKC