Sashank Santhanam

Department of Computer Science
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Education

University of North Carolina – Charlotte Charlotte, NC
Ph.D. in Computer Science expected May 2021

- Research area: Dialogue Systems, Human Behavior Modeling
- Advisors: Dr. Samira Shaikh
- Committee: Dr. Wlodek Zadrozny, Dr. Minwoo Jake Lee, Dr. Nicholas Davis

University of North Carolina – Charlotte Charlotte, NC
MS in Computer Science Dec 2015

- Research area: Social Media Analysis
- Advisors: Dr. Shaoting Zhang

Anna University Tamil Nadu, India
BE in Computer Science and Engineering May 2014

- Research area: Bayesian Networks

Research Experience

University of North Carolina – Charlotte Charlotte, NC
Ph.D. Candidate

Conversational Agents for CyberSecurity Defense

- Developing conversational agents that adapt cognitive architectures as external memories (long term and short term).
- Understanding the importance of relationship between speakers in dialogue generation and modeling relationships across social networks.
- Generating personalized messages through conversational agents and engage countermeasures strategies for social engineering and phishing attacks. [DARPA Grant]

Conversational Agents with Knowledge

- Incorporate knowledge to conversational through the use of URLs introduced during conversations
- Ensure robustness and factual consistency of responses in dialogue agents

Understanding Decision Making

- Evaluating the impact of anchoring and confirmation bias on decision making through visual interfaces for tasks on identifying and interpreting misinformation.
- Evaluating the impact of cognitive biases and experiment design towards conversational dialogue output evaluation.

Human Behavior Modeling

- Analysis of Twitter and Gab.com to understand how the online community comes together to express messages of solidarity through text and emojis
- Cross-platform analysis on Twitter and Gab.com for abusive language through various crisis events.

Professional Experience

Amazon Remote
Applied Research Intern Sept 2020

- Measuring and improving factual consistency in conversational agents
- Mentors: Behnam Hedayatnia, Dilek Hakkani-Tur

Nvidia Remote
Research Intern May 2020

- Worked on incorporating external knowledge to conversational agents
- Mentors: Wei Ping, Raul Puri, Mohammad Shoeybi, and Mostofa Patwary

Walmart, Global Shared Service Charlotte, NC
Data Analyst 2015 – 2016

- Developed software to help the associates at Walmart to process invoices and other receipts.
- Reduced workload of the associates by auto-matching invoices and the receipts.
- Developed workflows in alteryx and dashboards using Tableau to help in tracking of the backlogs.

Indian Institute of Technology,Madras Tamil Nadu, India
Intern 2015 – 2016

- Implemented a scoring algorithm in R to analyze the emotional variation on Twitter data during sporting events
- Advisor: Dr. Saji K. Matthew

Conference Publications

1) **Santhanam S.,** Ping W., Puri R., Shoeybi M., Patwary M., Catanzaro B., "Local Knowledge Powered Conversational Agents", Arxiv:2010.10150 [Upcoming NAACL submission]

2) **Santhanam S.,** Cheng Z., Brodie M., Dorr BJ., Bhatia A., Hebenstreit B., Zemel A., Dalton A., Strzalkowski T., Shaikh S, "Learning to Plan and Realize Separately for Open-Ended Dialogue Systems", in Findings of Empirical Methods in Natural Language Processing, 2020

3) Howcroft DM., Belz A., Clinciu M., Gkatzia D., Hasan SA., Mahamood S., Mille S., Rieser V., **Santhanam S.**, van-Miltenburg E., "Twenty Years of Confusion in Human Evaluation: NLG needs evaluation sheets and standardised definitions", in 13th International Natural Language Generation Conference,2020

4) Bhatia A., Dalton A., Brodie M., **Santhanam S.**, Shaikh S., Zemel A., Strzalkowski T., Dorr BJ., "Adaptation of a Lexical Organization for Social Engineering Detection and Response Generation", in Social Threats in Online Conversations, LREC, 2020

5) Dalton A., Aghaei E., Al-Shaer E., Bhatia A., Castillo E., Cheng Z., Dhaduvai S., Duan Q., Hebenstreit B. , Islam M., Karimi Y., Masoumzadeh A., Mather B., **Santhanam S.**, Shaikh S., Zemel A., Strzalkowski T., Dorr BJ., "Active Defense Against Social Engineering: The Case for Human Language Technology", in Social Threats in Online Conversations, LREC, 2020

6) **Santhanam S**., Shaikh S., "Modeling Conversation Context by Adapting Cognitive Architectures", in Bridging AI and Cognitive Science, ICLR, 2020

7) **Santhanam S.,** Karduni A., Shaikh S., "Studying the effects of Cognitive Biases in Evaluation of Conversational Agents", in ACM CHI 2020, Hawaii **[Honorable Mention]**

8) Dorr B., Bhatia A., Dalton A., Mather B., Hebenstreit B., **Santhanam S.**, Cheng Z., Shaikh S., Zemel A., Strzalkowski T., "Detecting Asks in Social Engineering Attacks: Impact of Linguistic and Structural Knowledge", in the 34th AAAI Conference on Artificial Intelligence, New York, USA

9) **Santhanam S**., Shaikh S., "Modeling Conversation Context by Adapting Cognitive Architectures", in 1st Workshop on Discourse Structure in Neural NLG 2019, Tokyo, Japan [Non-Archival]

10) **Santhanam S**., Shaikh S., "Emotional Neural Language Generation Grounded in Situational Contexts", in 4th Workshop on Computer Creativity in Natural Language Generation 2019, Tokyo, Japan

11) **Santhanam S**., Shaikh, S., "Towards Best Experiment Design in Evaluating Dialogue System Output", in 12th International Natural Language Generation Conference 2019, Tokyo, Japan

12) Wesslen R., **Santhanam, S.**, Karduni A., Cho I., Shaikh S., Dou W., "Investigating Effects of Visual Anchors on Decision-Making about Misinformation", in 21st International IEEE Conference on Visualization (EuroVis) 2019, Porto, Portugal,

13) Karduni A., Cho I. Wesslen R., **Santhanam S.**, Volkova S., Arendt D., Shaikh S., Dou W., "Vulnerable to Misinformation? Verifi!", in 24th ACM Conference on Intelligent User Interfaces, Los Angeles, USA, Mar. 16-20 2019,

14) Karduni A., Wesslen R., **Santhanam S.**, Cho I., Volkova S., Arendt D., Shaikh S., Dou W., "Can You Verifi This? Studying Uncertainty and Decision-Making about Misinformation in Visual Analytics", in 12th International AAAI Conference on Web and Social Media, Stanford, USA, Jun. 25-28 2018, (***Acceptance Rate**: 16%*)

15) **Santhanam S**., Srinivasan V., Glass S., Shaikh S., "I Stand With You: Using Emojis to Study Solidarity in Crisis Events", in Proceedings of 1st International Workshop on Emoji Understanding and Applications in Social Media (ICWSM), Stanford, USA, Jun. 25-28 2018, published by AAAI.

16) **Santhanam S**., Shaikh S., "I Stand With You: Detecting and Characterizing Expressions of Solidarity in Social Media", in 4th International Conference on Computational Social Science (IC2S2), Chicago, USA, July. 12-15 2018.

17) Cho I., Wesslen R., Karduni A., **Santhanam S.**, Shaikh, S., Dou, W., "The Anchoring Effect in Decision-Making with Visual Analytics", in 12th International IEEE Conference Visual Analytics Science and Technology, Phoenix, Arizona, Oct. 1-6 2017, (***Acceptance Rate**: 22% - 25%*)

Journal Publications

1) Srinivasan V., **Santhanam S**., Shaikh S., "Using Reinforcement Learning with External Rewards for Open-Domain Natural Language Generation", in Journal of Intelligent Information Systems

2) **Santhanam. S**, Srinivasan. V, Mahajan. K, Shaikh. S, "Towards Understanding the Pragmatics of Emojis through Solidarity Expressed during Crisis Events",

3) **Santhanam. S**, Shaikh. S, "A Survey of Natural Language Generation Techniques with a Focus on Dialogue Systems - Past, Present and Future Directions", Arxiv 1906.00500

Poster Presentations

1) **Santhanam S**., Shaikh, S., "Salient Context Identification from Memory for Neural Dialog Systems", in 2nd Southern Data Science Conference, Atlanta, USA, Apr. 13-14 2019.

2) Dalton, A., Zemal, A., Masoumzadeh, A., Bhatia, A., Dorr, B., Mather, B., Hebenstreit, B., Al-Shaer, E., Khoja, E., Castillo, E.J., Bunch, L., Vlahovic, M., Liu, P., Pirolli, P., Shah, R., Cartacio, S., Shaikh, S., **Santhanam S**., Dhaduvai, S., Strzalkowski, T., Karimi, Y., "Modeling

Social Engineering Risk using Attitudes, Actions, and Intentions Reflected in Language Use", in 32nd International FLAIRS Conference, Florida, USA, May. 19-22 2019. [Alphabetical Ordering]

3) **Santhanam S**., Shaikh, S., "Propaganda or Clickbait? Understanding and Classifying Types of Misinformation using Recurrent Neural Networks", in 1st Southern Data Science Conference, Atlanta, USA, Apr. 13-14 2018.

Press Coverage

1) **Santhanam S**., Shaikh, S., "Understanding the emoji of solidarity", in The Conversation, July 16, 2018

Awards/Scholarships

Deep Mind, Facebook, Center for Brains, Minds and Machines at MIT [ICLR] Virtual, 2020

Visual Dialog - Best Project Award Lowell, MA
Conversational International Summer School 2019

Association for Advancement of Artificial Intelligence Stanford, CA
Graduate Travel Support 2017

University of North Carolina – Charlotte Charlotte, NC
Graduate Assistant Support Plan(GASP) 2017 – Present

Professional Activities

1) Service

- Reviewer of the **Emoji Conference 2019, 2020**
- Reviewer of **NAACL 2019, 2021.**
- Reviewer of **ACL 2019, 2020.**
- Reviewer of **ACM CHI Conference on Human Factors in Computing Systems, 2019.**
- Reviewer of **WiNLP 2019.**
- Reviewer of **AAAI 2019, 2020, 2021.**
- Reviewer of **ICML 2020.**
- Reviewer for **EMNLP 2019, 2020.**
- Reviewer for **EACL 2021.**
- Reviewer for **ICLR 2021.**

2) Invited Lectures/Talks

- **Natural Language Processing** - Neural Networks for Natural Language Generation
- **Natural Language Processing** - Machine Translation
- **Computation Human Behavior Modeling (ITCS 8050/6050, PSYC-6099)** – Survey of Natural Language Generation Techniques
- **Applied Machine Learning -** Introduction to Reinforcement Learning

Skills

Software: Python, Tensorflow, PyTorch, Java, Javascript, D3
Language: English, Tamil (native)

References

1) Dr. Samira Shaikh

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Department of Computer Science,
University of North Carolina at Charlotte,
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2) Dr. Minwoo Lee
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3) Dr. Wlodek Zadrozny
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