SRIRAM GOPALAKRISHNAN

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EDUCATION

Ph.D. Computer Science with a focus on Automated Planning with Neural Networks - Arizona State University (in-progress)   **May 2021**
G.P.A. : 4.0

M.Sc. Computer Science with Thesis - Lehigh University, Bethlehem, PA   **May 2017**
G.P.A. : 4.0

B.Sc. E.C.E, and B.A. in Computer Science - Lafayette College, Easton, PA   **2010**
G.P.A. : 3.72

SKILLS

- Well versed in Automated Planning, Neural Networks, Probabilistic Graphical Models, Natural Language Processing, Reinforcement Learning
- Programming Languages: Proficient in Python, C++, C. Coded in Matlab,Java,R, and Simulink. Is knowledgeable and Implemented code with design patterns for complex software projects.
- Has also worked extensively with Micro-controller/Embedded applications, both hardware and software. Programmed large scale embedded systems with sensor networks, distributed intelligence, and fail-safes for robust behavior
- Soft Skills: Conflict resolution, and negotiation. Project management and presentations.

RELEVANT GRADUATE LEVEL COURSES

- Graduate Courses : Statistical Machine Learning, Human-Aware A.I. , Data Mining, Intelligent Agents, Text Mining, Search Engines, Advanced Algorithms, Advanced Programming Techniques, Advanced Operating Systems, Bio-Computing.
- Online Courses : Machine Learning (on Coursera by Andrew Ng). Probabilistic Graphical Models (on Coursera by Daphne Koller)

WORK EXPERIENCE

- **Design and Development Engineer** (Lutron Electronics)   2013- 2015
  + Managed the Embedded Engineering team for a large scale automated lighting and HVAC control system for home, and commercial building automation
  + Improved upon software architecture. Designed and Implemented a new communication protocol for the control system
  + Mentored new employees
- **Project Embedded Electrical Engineer** (Lutron Electronics)   2010-2013
  + Developed new features for a lighting control system, running on a 32-bit microcontroller.
  + Used design patterns to write robust code. Designed comprehensive test case scenarios for verification.
  + Worked with the manufacturing team to troubleshoots the production and hardware issues
  + Managed offshore development team for embedded software.
  + Supervised interns/co-ops

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GRADUATE RESEARCH

- Current Research :
  (1) Visualization of plan traces by embedding actions and state properties in low-dimensional space. The objective is to build an interface for mixed-initiative automated planning (with human's in the loop) that allows a non-technical user to interact with the automated planner.
  (2) Region Based Active Learning for selective learning of preferences to address data availability constraints.

- Collaborated with a colleague on learning embeddings for distributions over terms as opposed to embeddings of single terms (as in Word2Vec and GLoVe). See publications.
  2018

- Published work on novel approach (word2HTN) on learning from plan traces to identify semantically connected sequences of actions to build task hierarchies using word embeddings. Work presented at the International Joint Conference on Artificial Intelligence(IJCAI) Workshop on Goal Reasoning
  2016

- Published extension of word2HTN work on learning task hierarchies in AI Communications Journal.   2017

- Collaborated to apply work on learning task hierarchies (word2HTN) to train an agent in Minecraft game to assist a human. Work published at the Conference on Computational Intelligence in Games   2017

UNDERGRADUATE RESEARCH

- Improved upon a model of the adult and infant human cardiovascular system in Matlab and Simulink, for testing ventricular assist devices. Collected and compared data of the model's responses to different heart conditions.
  2007-2009

- Presented research work on cardiovascular system modeling at 33rd and 34th North-East Bio-Engineering conference.   03/ 2007, 02/ 2008

PUBLICATIONS AND PRESENTATIONS

- Gopalakrishnan, S., Soni, U., & Kambhampati, S. (2019,July). Feature Directed Active Learning. To be presented at Workshop on Explainable AI in Planning, ICAPS 2019, Berkeley, CA, USA

- Gopalakrishnan, S., & Kambhampati, S. (2019,July). TGE-viz : Transition Graph Embedding for Visualization of Plan Traces and Domains.https://arxiv.org/pdf/1811.09900.pdf.
  System to be demonstrated at ICAPS 2019, Berkeley, CA, USA

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- Zha, Y., Li, Y., Gopalakrishnan, S., Li, B., & Kambhampati, S. (2018, July). Recognizing Plans by Learning Embeddings from Observed Action Distributions. In Proceedings of the 17th International Conference on Autonomous Agents and MultiAgent Systems (pp. 2153-2155). International Foundation for Autonomous Agents and Multiagent Systems.

- Gopalakrishnan, S., Muñoz-Avila, H., & Kuter, U. (2018). Learning task hierarchies using statistical semantics and goal reasoning (Journal version). AI Communications (2018)

- Nguyen, C., Reifsnyder, N., Gopalakrishnan, S., & Munoz-Avila, H. (2017, August). Automated learning of hierarchical task networks for controlling minecraft agents. In Computational Intelligence and Games (CIG), 2017 IEEE Conference on (pp. 226-231). IEEE.

- Gopalakrishnan, S., "Learning Hierarchical Task Networks Using Semantic Word Embeddings" (2017). Theses and Dissertations. 2608. Lehigh University,PA, USA.
  https://preserve.lehigh.edu/etd/2608

- Gopalakrishnan,S., Muñoz-Avila,H., Kuter,U., Word2HTN:Learning Task Hierarchies Using Statistical Semantics and Goal Reasoning. *The IJCAI-2016 Workshop on Goal Reasoning.* AAAI Press. 2016. New York,NY,USA.

- Yu,Y., & Gopalakrishnan,S. Elastance Control of a Mock Circulatory System for Ventricular Assist Device Test. *In proceedings of American Control Conference.* 2009. St Louis, MO. USA.1009-1014.

- Yu,Y., & Gopalakrishnan,S. Evaluation of a minimally invasive cardiac function estimator for patients with rotary VAD support. *In proceedings of IEEE 33rd North East Bio Engineering Conference.* 2007. Long Island,NY,USA.161-162.

PATENTS

- Digital messages in a load control system
  http://www.patentsencyclopedia.com/app/20150295411
  https://patents.google.com/patent/US20150295411A1/en

- Load Control system responsive to location of an occupant and mobile devices:
  https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2016029165
  https://patents.google.com/patent/WO2016029165A2/ko

OTHER MEDIA

- Paper presentation on Explainable A.I. in Human Aware A.I. course at Arizona State University :
  https://www.youtube.com/watch?v=qBSE4bJYsoc   September 2018
- Lab presentation on Deepmind's Starcraft 2 API for Reinforcement Learning Research:
  https://www.youtube.com/watch?v=tjKlXMa_C-M   April 2018

REFERENCES

- Dr. Subbarao Kambhampati (Computer Science professor and Ph.D. research advisor)
  rao@asu.edu

- Dr. Héctor Muñoz-Avila (Master's Thesis Advisor)
  hem4@lehigh.edu

- Dr. Ugur Kuter (Senior Researcher at SIFT and research collaborator)
  ukuter@sift.net

- Dr. Yih-Choung Yu (ECE professor and Undergraduate research advisor)
  yuy@lafayette.edu

CO-CURRICULARS

Certified Yoga Teacher (Vinyasa and Iyengar Yoga). Carpentry, Avid runner.