USC Viterbi
School of Engineering

Computer Science: Ph.D. Dissertation Topics

2019 Dissertation Titles

- Software Quality Understanding by Analysis of Abundant Data (SQUAAD): Towards Better Understanding of Life Cycle Software Qualities, Principal Investigator (P.I): Barry Boehm, Professor
- Efficient Graph Processing with Graph Semantics Aware Intelligent Storage, P.I: Murali Annavaram, Professor
- Representation Problems in Brain Imaging, P.I: Greg Ver Steeg, Assistant Professor
- The Complexity of Functions, P.I: Leonard Adleman, Professor
- Defending Industrial Control Systems: An End-To-End Approach for Managing Cyber-Physical Risk, P.I: Clifford Neuman, Associate Professor
- Enabling Spatial-Visual Search for Geospatial Image Databases, P.I: Cyrus Shahabi, Professor
- Graph Embedding Algorithms for Attributed and Temporal Graphs, P.I: Emilio Ferrara, Assistant Professor
- Computational Models for Multidimensional Annotations of Affect, P.I: Shrikanth Narayanan, Professor
- Speeding up Path Planning on State Lattices and Grid Graphs by Exploiting Freespace Structure, P.I: Sven Koenig, Professor
- Incrementality for visual reference resolution in spoken dialogue systems, P.I: Kallirroi Georgila, Assistant Professor
- Calibrating COCOMO(R) II for Functional Size Metrics, P.I: Barry Boehm, Professor
- Understanding and Optimizing Internet Video Delivery, P.I: Ramesh Govindan, Professor
- Data Scarcity in Robotics: Leveraging Structural Priors and Representation Learning, P.I: Gaurav Sukhatme, Professor
- Leveraging Training Information for Efficient and Robust Deep Learning, P.I: Fei Sha, Associate Professor
- Learning from Planners to Enable New Robot Capabilities, P.I: Gaurav Sukhatme, Professor
- Deep Representations for Shapes, Structures and Motion, P.I: Hao Li, Associate Professor
- Leveraging Structure for Learning Robot Control and Reactive Planning, P.I: Gaurav Sukhatme, Professor
- Efficient Bounded-Suboptimal Multi-Agent Path Finding and Motion Planning via Improvements to Focal Search, P.I: Sven Koenig, Professor
- Improving Network Security through Collaborative Sharing, P.I: John Heidemann, Professor
- Detecting and Characterizing Network Devices Using Signatures of Traffic About End-Points, P.I: John Heidemann, Professor
- Dynamic Topology Reconfiguration of Boltzmann Machines on Quantum Annealers, P.I: Robert Lucas, Associate Professor

- Target Assignment and Path Planning for Navigation Tasks with Teams of Agents, P.I: Sven Koenig, Professor
- A Framework for Research in Human-Agent Negotiation, P.I: Jonathan Gratch, Professor
- Invariant Representation Learning for Robust and Fair Predictions, P.I: Premkumar Natarajan, Professor
- Generating Psycholinguistic Norms and Applications, P.I: Shrikanth Narayanan, Professor
- Optimization of the Combinatoric Closely Spaced Objects Resolution Algorithm with Adiabatic Quantum Annealing, P.I: Robert Lucas, Associate Professor
- Effective Data Representations for Deep Human Digitization, P.I: Hao Li, Associate Professor
- Efficient Pipelines for Vision-Based Context Sensing, P.I: Ramesh Govindan, Professor
- Enabling symbolic execution string comparison during code-analysis of malicious binaries, P.I: Clifford Neuman, Associate Professor

2018 Dissertation Titles

- Decoding Information about Human-Agent Negotiations from Brain Patterns, P.I: Morteza Dehghani, Assistant Professor
- Multi-Robot Strategies for Adaptive Sampling with Autonomous Underwater Vehicles, P.I: Gaurav Sukhatme, Professor
- Empirical Study of Informational Regularizations in Learning Useful and Interpretable Representations, P.I: Raghu Raghavendra, Professor
- Rapid Creation of Photorealistic Virtual Reality Content with Consumer Depth Cameras, P.I: Evan Suma Rosenberg, Assistant Professor
- Do Humans Play Dice: Choice Making with Randomization, P.I: David Kempe, Associate Professor
- Hierarchical Planning in Security Games; A Game Theoretic Approach to Strategic, Tactical and Operational Decision Making, P.I: Milind Tambe, Professor
- Dynamic Pricing and Task Assignment in Real-Time Spatial Crowdsourcing Platforms, P.I: Cyrus Shahabi, Professor
- Nonverbal Communication for Non-Humanoid Robots, PI: Maja Mataric, Professor
- Deep Learning Models for Temporal Data in Health Care, P.I: Yan Liu, Associate Professor
- Architectural Evolution and Decay in Software Systems, P.I: Nenad Medvidovic, Professor
- Balancing Security and Performance of Network Request-Response Protocols, P.I: John Heidemann, Professor
- From Active to Interactive 3D Object Recognition, P.I: Nora Ayanian, Assistant Professor
- Speech and Language Understanding in the Sigma Cognitive Architecture, P.I: Paul Rosenbloom, Professor

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Computer Science: Ph.D. Dissertation Topics

- Learning to Diagnose from Electronic Health Records Data, P.I: Greg Ver Steeg, Assistant Professor
- Utilizing User Feedback to Assist Software Developers to Better Use Mobile Ads in Apps, P.I: William G.J. Halfond, Associate Professor
- Information as A Double-Edged Sword in Strategic Interactions, P.I: Shaddin Dughmi, Associate Professor
- Transfer learning for intelligent systems in the wild, P.I: Fei Sha, Associate Professor
- Modeling, Learning, and Leveraging Similarity, P.I: Fei Sha, Associate Professor
- Game Theoretic Deception and Threat Screening for Cybersecurity, P.I: Milind Tambe, Professor
- Making Web Transfers More Efficient, P.I: Ethan Katz-Bassett, Associate Professor
- Polygraph: A Plug-n-Play Framework to Quantify Application Anomalies, P.I: Shahram Ghandeharizadeh, Associate Professor
- Spatiotemporal Prediction with Deep Learning on Graphs, P.I: Cyrus Shahabi, Professor
- Data-Driven 3D Hair Digitization, P.I: Hao Li, Assistant Professor
- Towards Socially Assistive Robot Support Methods for Physical Activity Behavior Change, P.I: Maja Mataric, Professor
- Assessing Software Maintainability in Systems by Leveraging Fuzzy Methods and Linguistic Analysis, P.I: Barry Boehm, Professor
- Motion Coordination for Large Multi-Robot Teams in Obstacle-Rich Environments, P.I: Nora Ayanian, Assistant Professor
- Asynchronous Writes in Cache Augmented Data Stores, P.I: Shahram Ghandeharizadeh, Associate Professor
- Intelligent Near-Optimal Resource Allocation and Sharing for Self-Reconfigurable Robotic and Other Networks, P.I: Wei-Min Shen, Associate Professor
- Data-Driven Acquisition of Closed-Loop Robotic Skills, P.I: Gaurav S. Sukhatme, Professor
- Measuring the Impact of CDN Design Decisions, P.I: Ethan Katz-Bassett, Assistant Professor
- Semantic-based Visual Information Retrieval using natural language phrases, P.I: Ram Nevatia, Professor
- Non-Traditional Resources and Improved Tools for Low-Resource Machine Translation, P.I: Kevin Knight, Professor
- Active State Learning from Surprises in Stochastic and Partially-observable Environments, P.I: Wei-Min Shen, Associate Professor
- Compositing Real and Virtual Objects with Realistic, Color-Accurate Illumination, P.I: Paul Debevec, Adjunct Professor
- Hashcode Representations of Natural Language for Relation Extraction, P.I: Aram Galstyan, Associate Professor
- Performance-Optimal Read-Only Transactions, P.I: Wyatt Lloyd, Assistant Professor

- Artistic Control Combined with Contact and Elasticity Modeling in Computer Animation Pipelines, P.I: Jernej Barbic, Associate Professor
- Detection, Localization, and Repair of Internationalization Presentation Failures in Web Applications, P.I: William Guillermo Jos Halfond, Associate Professor
- 3D Deep Learning for Perception and Modeling, P.I: Ulrich Neumann, Professor
- Smart Monitoring and Autonomous Situation Classification of Humans and Machines, P.I: Laurent Itti, Professor
- Deep Generative Models for Image Translation, P.I: C.-C. Jay Kuo, Professor
- Predicting and Planning against Real-world Adversaries: An End-to-end Pipeline to Combat Illegal Wildlife Poachers on a Global Scale, P.I: Milind Tambe, Professor
- Learning to Adapt to Sensor Changes and Failures, P.I: Craig Knoblock, Professor

2017 Dissertation Titles

- Learning Affordances through Interactive Perception and Manipulation, P.I: Gaurav Sukhatme, Professor
- Landmark Detection for Faces in the Wild, P.I: Laurent Itti, Professor
- Estimation-Based Control for Humanoid Robots, P.I: Stefan Schaal, Professor
- Human Appearance Analysis and Synthesis Using Deep Learning, P.I: Hao Li, Assistant Professor
- Neural Networks for Narrative Continuation, P.I: Andrew Gordon, Associate Professor
- Rethinking Perception-Action Loops via Interactive Perception and Learned Representations, P.I: Gaurav Sukhatme, Professor
- Dynamic Graph Analytics for Cyber Systems Security Applications, P.I: Viktor Prasanna, Professor
- Learning Invariant Features in Modulatory Neural Networks Through Conflict and Ambiguity, P.I: Laurent Itti, Professor
- Design and Evaluation of Adaptive Redirected Walking Systems, P.I: Evan Suma, Assistant Professor
- Efficient Indexing and Querying of Geo-tagged Mobile Videos, P.I: Ying Lu, Professor
- Understanding the Relationship Between Goals and Attention, P.I: Laurent Itti, Professor
- Location Privacy in Spatial Crowdsourcing, P.I: Cyrus Shahabi, Professor
- Improving machine learning algorithms via efficient data relevance discovery, P.I: Yan Liu, Associate Professor
- From Matching to Querying: A Unified Framework For Ontology Integration, P.I: Viktor Prasanna, Professor
- Face Recognition and 3D Face Modeling from images in the wild, P.I: Gerard Medioni, Professor
- Distributed Resource Management For QOS-Aware Service Provision, P.I: Leana Golubchik, Professor

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Computer Science: Ph.D. Dissertation Topics

- 3D Inference and Registration with Application to Retinal and Facial Image Analysis, P.I: Gerard Medioni, Professor
- Reducing Inter-Component Communication Vulnerabilities in Event-Based Systems, P.I: Nenad Medvidovic, Professor
- A model for estimating cross-project multitasking overhead in software development projects, P.I: Barry Boehm, Professor
- Real-World Evaluation and Deployment of Wildlife Crime Prediction Models, P.I: Milind Tambe, Professor
- Spatiotemporal Traffic Forecasting in Road Networks, P.I: Cyrus Shahabi, Professor
- Automated Negotiation with Humans, P.I: Jonathan Gratch, Professor
- Simultaneous Center of Mass Estimation and Foot Placement Selection in Complex Planar Terrains for Legged Architectures, P.I: Wei-Min Shen, Professor
- Computational Aspects of Optimal Information Revelation, P.I: Shang-Hua Teng, Professor
- Resource Scheduling in Geo-distributed Computing, P.I: Leana Golubchik, Professor
- Mutual Information Estimation and Its Applications to Machine Learnin, P.I: Aram Galstyan, Associate Professor
- Multimodal Representation Learning of Affective Behavior, P.I: Stefan Scherer, Assistant Professor
- Neural Creative Language Generation, P.I: Kevin Knight, Professor
- Computing Cascades: How to Spread Rumors, Win Campaigns, Stop Violence, and Predict Epidemics, P.I: Viktor Prasanna, Professor
- Neural Sequence Models: Interpretation and Augmentation, P.I: Kevin Knight, Professor
- Conversation-Level Syntax Similarity Metric, P.I: Morteza Dehghani, Assistant Professor
- Artificial Intelligence for Low Resource Communities: Influence Maximization in an Uncertain World, P.I: Milind Tambe, Professor
- Automated Repair of Presentation Failures in Web Applications Using Search-based Techniques, P.I: William G. J. Halfond, Associate Professor
- Scaling-out Traffic Management in the Cloud, P.I: Minlan Yu, Associate Professor
- Optimization-Based Whole-Body Control and Reactive Planning for a Torque Controlled Humanoid Robot, P.I: Stefan Schaal, Professor
- Scalable Machine Learning Algorithms for Item Recommendation, P.I: Prem Natarajan, Professor
- Weighted Factor Automata: A Finite-State Framework for Spoken Content Retrieval, P.I: Shrikanth Narayanan, Professor
- Techniques for Methodically Exploring Software Development Alternatives, P.I: Nenad Medvidovic, Professor
- Identifying Social Roles in Online Contentious Discussions, P.I: Ron Artstein, Assistant Professor

Computer Science: Ph.D. Dissertation Topics

- Language Understanding in Context: Incorporating Information About Sources and Targets, P.I: Morteza Dehghani, Associate Professor