INNOVATION WITH IMPACT

A Celebration of Graduate Student Projects, Research, Teaching and Service

Cross-Disciplinary Exhibition of Graduate Student Work
Awards Ceremony and Reception
Rangos Ballroom, Cohon University Center
April 7, 2016
Order of Events

4:30-6:00 p.m.
Exhibition of Graduate Student Work and Reception

5:00 p.m.

Proclamation of Graduate & Professional Student Appreciation Week

Presentation of Carnegie Mellon University Graduate Student Service and Teaching Awards and Recognition of the Three Minute Thesis Awardee

6:00 p.m.
The exhibition and reception will close
2016 Graduate Student Service Award

*Will Frankenstein*

Engineering & Public Policy
College of Engineering

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2016 Graduate Student Teaching Award

*Clive Newstead*

Mathematics
Mellon College of Sciences
PRESENTATIONS

College of Engineering

Chemical Engineering
Jacob Boes
Core Level Shifts in Cu-Pd Alloys as a Function of Bulk Composition and Structure

Stephanie Kirby
Formation and Disruption of a Rigid Hydrophobin Film at an Air/water Interface

Samji Samira
Hydrogenation on Pd Based Alloys

Antonios Tasoglou
Formation and Chemical Aging of Secondary Organic Aerosol during the β-Caryophyllene Oxidation

Civil & Environmental Engineering
Vaibhav Agrawal
Continuum Level Modelling of Phase Transformations

Lauren Bergman, Kelly Good, Nur Orak, Duygu Altintas, Tylesha Drayton
World Environmental & Water Resources Congress 2015

Nizette Edwards Consolazio, Greg Lowry
Hydraulic Fracturing Fluid-rock Interactions: Reactivity of Dazomet

Yiming Gu
From Twitter to Detector: Real-time Traffic Incident Detection using Social Media Data

Carl Malings
Optimizing Sensor Placements for Infrastructure System Management

Alyssa McQuilling
Modeling Livestock Ammonia Emissions in the United States: From Farms to Emissions to Particulate Matter

Miliad Memarzadeh
System-level Inspection Scheduling: An Approach Based on Stochastic Future Allocation

Sneha Shanbhag
Energy Efficient Desalination of Brackish Water Via Electrochemical De-ionization

Electrical & Computer Engineering
Sandeep Dsouza
Heart Rate Estimation From Photoplethysmogram During Intensive Physical Exercise Using Non-parametric Bayesian Factor Analysis

Abelino Jimenez
Secure Modular Hashing

Ashwati Krishnan
On Using Residual Voltage to Estimate Electrode Model Parameters for Damage Detection

Anuva Kulkarni
Automation of Model Design and Analysis for Big Mechanisms

Wenbo Liu
Generalized Transitive Distance with Minimum Spanning Random Forest

Abhishek Sharma
Threshold Switch Selectors for Crosspoint Memories

Jesse Thornburg
Incorporating Smart Grid Operating Strategies into Off-Grid Electrification Planning

Xiaoqi Yin
Adaptive Robust Optimization for Coordinated Capacity and Load Control in Data Centers

Energy Science, Technology & Policy
Pradeep Somi Ganeshbabu, Rohan Biwaler, Nirmal Mundhada, Samir Kamat
Integrated Solar Combined Cycle Power Plant

Akanksha Tyagi
Electrically Assisted Manufacturing

Engineering & Public Policy
Casey Canfield, Amanda Willard
Lessons From Creating Change Conference

Julia Chelen, Shereen Chaudhry
Visual Choice Sets of Let’s Make a Deal

Barry Dewitt
Environmental Risk Perception From Visual Cues: The Psychophysics of Tornado Risk Perception
Daniel Gingerich
Air Emission Implications of Expanded Wastewater Treatment at Coal-Fired Generators

Brock Glasgo
How Much Electricity Can We Save By Using Direct Current Circuits in Homes?

Qiwei Han
Influence the Influencers: Lessons Learned From a Large Mobile Network

Nicky Hanus
Leveraging Pittsburgh’s Energy Efficiency Social Network to Understand Energy Efficiency Adoption

Lynn Kaack
Introducing Probability into Energy Forecasting

Alexandre Ligo
Comparison between Benefits and Costs of Offload of Mobile Internet Traffic Via Vehicular Networks

Daniel Posen
Green Feedstocks vs. Green Energy in U.S. Plastics Production

Brian Sergi
Understanding Public Perceptions of Tradeoffs in Climate, Health, and Energy Using Discrete Choice Analysis

Evan Sherwin
The US Energy System Has Become More Volatile and Harder to Predict: A Retrospective Analysis of U.S. Energy Projections

Jeffery Song
Probabilistic Framework for Aquatic Invasive Species eDNA Sampling Design

Material Science & Engineering
Sudipto Mandal
Texture and Microstructure Modeling in Two-Phase Titanium Alloys

Robert Simpson, Luis Hernandez Cazares, Allison Perna
The Initial Stages of Growth of Sp2- boron Nitride Films via Organometallic Vapor Phase Epitaxy (OMVPE)

Mechanical Engineering
David Colmenares
Compliant Wing Design for a Flapping Wing Micro Air Vehicle

Lili Ehrlich
Thermal Conductivity of Cryoprotectants With SIMs

Kangkang Hu
Surface Segmentation for Polycube Construction Based on Generalized Centroidal Voronoi Tessellation

Ankit Jain
Thermal Transport in Metals

Siddharth Komini Babu
Resolving Non-Precious Metal Catalyst Electrode Morphology’s Impact on the Performance of Polymer Electrolyte Fuel Cell

Zhongju Li
Spatial Variation of PM2.5 Components with Mobile Sampling Strategy in Pittsburgh

Jieyu Lu
Modeling of a Parallel Wire Robot on Curved Surface

Christopher McComb, Kosa Goucher-Lamber
Impossible by Design? Fairness, Strategy, and Arrow’s Impossibility Theorem

Sneha Prabha Narra
Toward Enabling Spatial Control of Ti-6Al-4V Solidification Microstructure in the Electron Beam Melting Process

Quan Nguyen
Adaptive Control for Dynamic Bipedal Walking

Kevin Parrish, Shubhaditya Majumdar, Simon Lu
Thermal Conductivity Accumulation Function of Silicon-Germanium Alloy from Thermoreflectance and First-Principles

Prasanna R Natarajan
NAYAN: Walker Sensor Add-on

Jiawei Shi
Near-Field Energy Extraction with Hyperbolic Metamaterials

Celeste To
Highly Stretchable Optical Soft Sensor
College of Fine Arts

Architectecture

Eleni Katrini
Synergies of a Shared Household

Siliang Lu
HVAC Design for a 3-story Junior College Building in Doha

Art

Zhiwan Cheung
Golden Heritage Living

Zhiwan Cheung
Simply Going Bananas

Brittany De Nigris
Making Work

Jesse Kauppila
It's All Fun and Games

Daktoah Konicek
MINOE's Loop

Adam Milner
Adam Milner Bookworks

Design

Xiaowei Jiang
Communicating Trust for Nonprofits

Jiyoung Ko, Saumya Kharbanda
Recap of SXSW Interactive

Kaylee White
User Experience Design

Drama

Dahlia Al-Habieli, Pat Hayes
Prague Quadrennial

Domitille Angoulvant
Mind Expansion

Almeda Beynon, Kevan Loney
Lovushke

Almeda Beynon
United States Institute for Theatre Technology Conference

Eugenie Carabatsos
Rubble

Mora Harris
What You Don’t Know at Little Fish Theatre

Sharon Limpert
Technological Communication in Costume Making

Rachael Ralby
Theatrical Understructure, A Survey from Historical Reproduction to Modern Interpretation and Extrapolation

Terrence Mosley
Power of Pop

Alex Stevens, Patrick Hayes
HOG Factor Four Competition

Dietrich College of Humanities & Social Sciences

Center for Neural Basis of Cognition

Qiong Zhang
Consistency in Brain Activation Predicts Success in Transfer

English

Mary Glavan
Mobility in the Field: Privilege and its Problems in Rhetorical Ethnography

Kate Hamilton
Literary Celebrity in Eighteenth-Century London: The Burney Family Collection at Yale

Jessica Harrell
Emerging Memories: A Rhetorical History of Remembering after September 11, 2001

Will Penman
Sensitizing Ourselves - Ethics with Marginalized Populations

Kristin Shimmin
Useful Information in Edward Long’s The History of Jamaica (1774)

Garrett Stack
Student Empowerment through Dystopic Case Studies

Bret Vukoder
Selling Truth through Violence: The War Documentaries of the United States Information Agency
History
Susan Grunewald
German Prisoners of War in the Soviet Union, 1941-1956

Takashi Matsumaru

Jonathan Neu
Living Monuments: Grand Army Veterans’ Advocacy for Institutions of Learning, 1890-1920

Meredith Soeder
Encountering a German Music Utopia: Perceptions of Paul Whiteman’s Jazz in 1926 Berlin

Jonathan Stepp
The Importance of the National-Ideological Context of DEFA Film Production

Modern Languages
Monika Clarke
Teaching English

Maria Pia Gomez Laich
Pragmatic Analysis of Spanish Textbooks

Avigail Oren
Adjusting to Change: The Jewish Community Center Movement in Postwar Urban America, 1945-1980

Tianyu Qin
Dynamic Assessment of L2 Comprehension: A Synthesis Study

Aurora Tsai
Applying Reading-to-Learn Skills in a Second Language

Asley Weber
Exploring How English Language Learners Position Themselves in a Recently-Diversified Small City

Geoff Young
Teaching English as a Foreign Language through Virtual Study Abroad

Deana Zehren
Language Immersion Programs in Quebec: Bridging the Two Solitudes

Philosophy
Daniel Malinsky
Causal Inference and Public Policy: Problems and (Some) Solutions

Liping Tang
Ex Post Signaling: Value of information and Value of Signals

Psychology
Brittany Jakubiak
The Magic Touch?: An Experimental Test of Whether Affectionate Touch Before and During Relational Conflict Improves Conflict Behaviors and Relational Perceptions.

Vencislav Popov
Retrieval of Relational Information During Associative Recognition

Layla Unger
The Role of the Prefrontal Cortex in Inductive Reasoning: An fNIRS Study

Social and Decision Sciences
Lynn Conell-Price
The Impact of Trust on the Effectiveness of Guidance in Health Insurance Decisions

Caitlin Drummond
Development and Validation of the Scientific Reasoning Scale

Ania Jaroszewicz
The Effect of Financial Stress on Information Search

Talya Lazerus
What Makes Firsts Special: Insight on the Relationship between Transitions and Sentimental Value

Erin McCormick
A Review of Literature on Judgment and Decision Making in Disasters

Joachim Talloen
Rethink! The Gambler’s Fallacy and Brackets

Statistics
Sangwon Hyun
Epidemiological Forecasting using Empirical Bayes

Nicolas Kim
On the Geometry and Extremal Properties of the Edge-Degeneracy Model

Giuseppe Vinci
Separating Spike Count Correlation from Firing Rate Correlation
H. John Heinz III College

Information Systems & Management: Information Security Policy Management
Nicholas Cifranic
Communications and Cyber Security
Haibo Wang
Secure360 Conference

Information Systems & Management: Information Systems
Matthew Cleinman
Privacy and Technology
Yiye Zhang
Paving the Cowpaths: Innovation in Healthcare Management through Data-Driven Decision Making

Public Policy & Management: Creative Enterprises
Yihong Chen
Game Developers Conference 2016
Daniel Fonner
Arts Advocacy Day 2016
Melissa LaRosa
Vision Summit
Eléonore Moncheur de Rieudotte
2015 – The Social Value of Museums: Inspiring Change

Public Policy & Management: Health Care Policy
Shalini Ray
National Congress on Healthcare Leadership
Phuong Tran
Health Information Management System Society Conference
Janine Jelks-Seale
A Policy Fly on the Wall of the American Planning Association’s 2015 National Planning Conference

Public Policy & Management: Public Policy Management
Veronica Marotta
Who Benefits From Targeted Advertising
Zachia Nazarzai
Afghan-American Conference

Mellon College of Science

Biological Sciences
Vinitha Ganesan
Searching for Biomarkers for Interstitial Lung Disease Associated with Rheumatoid Arthritis
Karen Kormuth
Potential Roles of Unconventional G-quadruplexes in rRNA Biogenesis
Beril Kumcuoglu
Late Nuclear Stages of 60S Ribosomal Subunit Assembly Involves Multiple Conformational Changes in Two Distinct Neighborhoods
Pieter Spealman, Hao Wang, Joel McManus, Carl Kingsford
Identifying Ribosome Collisions Using an Enhanced Ribosome Profiling Technique and Analysis Pipeline
Minyan Zheng
Examination of Gene Expression Changes During Larval Regeneration in Starfish

Chemistry
Jianjun He
A NIR Genetically Targetable and Activatable Photosensitizer
Husain Kagalwala
Different Approaches to Solar Hydrogen: Visible Light-driven Water Reduction and Alcohol Dehydrogenation
Christian Legaspi
Electronic and Optical Properties of Novel Carbazole-based Donor-acceptor Compounds for Applications in Blue-emitting Organic Light-emitting Diodes
Samaneh Mesbahi
Modeling of Structure and Ion Interactions in NMDA Receptor
Logan Plath
Analysis of Intact Cowpea Mosaic Virus by MALDI-TOF Mass Spectrometry Incorporating Superconducting Tunnel Junction Cryodetection

Yunyan Qiu
Palladium Catalyzed Chain-Growth Polycondensation of Fluorene by Direct Lithium-Halogen Cross-Coupling Reactions

Woong Young So
Dynamic Features of Rod-Shaped Au Nanoclusters

Matteus Tanha
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Physics

Aklant Bhowmick
Effect of Pressure Fluctuations on Richtmeyer Meshkov Coherent Structure

Patrick Diggins
On the Effect of Mapping in the Coarse Graining of Elastic Networks

Paul La Plante
Helium Reionization Simulations: Seeing the Forest for the Trees

Sukhdeep Singh
Intrinsic Alignments of Galaxies

M. Mert Terzi
Revisiting Tilt in Classical Curvature Elastic Theories for Membranes

Varun Vaidya
Viability of Supersymmetric Dark Matter

School of Computer Science

Computer Science

Noam Brown
Strategy-Based Warm Starting for Regret Minimization in Games

Jesse Dunietz, Ardon Shorr, Daniel Gingerich, Lauren Hayward
Public Communication for Researchers: A Grassroots Initiative Empowering Students to Talk About Their Work and Why It Matters

Christian Kroer
Discretization of Continuous Action Spaces in Extensive-Form Games

Human-Computer Interaction

Rebecca Gulotta
Curatorial Agents

Siyan Zhao
Stereo Haptics: Designing Haptic Interactions Using Audio Tools

Jimin Zheng, Jennifer Baranoff, Rodolfo Gonzales, Heidi Yang, Jay Liu
Lantern: Empowering Refugees through Community-Generated Guidance Using Near Field Communication

Institute for Software Research

Nathan Fulton
KeYmaera X: An Axiomatic Theorem Prover for Hybrid Systems

Oleg Iskra, Ruslan Aiginin
Voice Computer Chronos - Intelligent Device for the Whole Family

Arun Kalyanasundaram
How to Hackathon: Socio-technical Tradeoffs in Brief, Intensive Collocation

Darya Kurilova
Compiling a Database Management System Just-in-time

Momir Malik, Hemank Lamba
Population Bias in Geotagged Tweets

Ashwini Rao
Expecting the Unexpected: Understanding Mismatched Privacy Expectations Online

Ivan Ruchkin
Architectural and Analytic Integration of Cyber-Physical System Models

Lane Center for Computational Biology

Hao Wang
Accurate Recovery of Ribosome Positions Reveals Slow Translation of Wobble-Pairing Codons in Yeast

Language Technologies Institute

Hanxiao Liu
Semi-supervised Learning with Adaptive Spectrum
**Machine Learning**

Sashank Jakkam Reddi  
*On Variance Reduction in Stochastic Gradient Descent and It’s Asynchronous Variants*

Willie Neiswanger  
*Emarrassingly Parallel MCMC*

Mrinmaya Sachan  
*An Active Learning Approach to Coreference Resolution*

**Robotics Institute**

Kim Baraka  
*Adaptive Interaction of Persistent Robots To User Temporal Preferences*

Jason Blum  
*Robotic Sampling at Depth: Detecting Features in a Column of Water*

Shervin Javdani  
*Shared Autonomy Via Hindsight Optimization*

Vishwas Kalipalya Mruthyunjaya  
*Facial Expressions Interpretation for Human-Robot Interaction*

Heather Knight  
*Expressive Robot Motion*

Daniel Maturana  
*VoxNet: A 3D Convolutional Neural Network for Real-Time Object Recognition*

Juan Pablo Mendoza  
*Selectively Reactive Coordination for a Team of Robot Soccer Champions*

Devdatta Narote  
*Discrimination Between Crops and Weeds Using GLCM and Neural Network*

Stefanos Nikolaidis  
*Human-Robot Mutual Adaptation: A Bounded-Memory Model*

Shehzaman Salim Khatib  
*Asynchronous Distributed Information Leader Selection in Robotic Swarms*

Roberto Shu, Avinash Siravuru  
*On the Utility of Active Damping Let for Safe Landing From a Free Fall*

Arun Venkatraman  
*Online Instrumental Variable Regression with Applications to Online Linear System Identification*

**Tepper School of Business**

**Business Administration**

Ben Ganzfried, James Langhauser  
*MIT-Sloan Sports Analytics Conference 2016*

Zach Grosz, Ben Ganzfried, James Langhauser  
*Sports Analytics Conference Presentation*

Joseph Stauffer, Nathan DeCarolis, Eduardo Guardia  
*Academic and Professional LGBTQ Diversity & Inclusion Efforts*

**Management of Manufacturing & Automation**

Xin Wang  
*Green Technology Development and Adoption: Competition, Regulation, and Uncertainty - A Global Game Approach*

Ronghuo Zheng  
*Discussion: The Role of Financial Reporting in Corporate Political Strategy*

**Marketing**

Jung Ho Han  
*Decision by Sampling and Better/Worse-than-Average Effect*

**Organizational Behavior and Theory**

Erin Fahrenkopf  
*Moving to Gain Distance from Others but not from Yourself*

Anna Mayo  
*The Counteracting Effects of Gender Diversity in Expertise Use: Disentangling Participation and Influence*

Ying Zhang  
*Appreciation or Awareness? Differential Preferences for Category Spanning in an Online Community of Product Reviewer*

**University Program**

**Entertainment Technology Center**

Cheryl-Jean Leo  
*Entropy*
Special Thanks to the Graduate & Professional Student Appreciation Week Partners

CMU Alumni Association
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Innovation with Impact is brought to you by the Office of the Assistant Vice Provost for Graduate Education and the Graduate Student Assembly to highlight the research, project and studio work of our Carnegie Mellon graduate students during Graduate and Professional Student Appreciation Week.