HOSTED BY THE USNA RESEARCH OFFICE

VIRTUAL Midshipman Research Poster Session

U.S. Naval Academy
https://www.usna.edu/AcResearch/MidResearch/
4 Dec 2020

During this live event on Dec. 4th from 0830-1030, guests may join specific Google Meets to talk to the midshipman researchers or to listen to their explanations. Please join Meets with your microphone muted. You can enter questions into the Chat and talk directly to the midshipmen when appropriate.

0830-0900	Open poster viewing Mids should have their Meet open but can join other Meets to talk to others about their research. Guests can view posters and decide who they'd like to visit (note Poster #).
0900-1030	All mids must be at their assigned Meet to talk to guests about their research or answer questions.

These midshipmen are enrolled in independent research courses (XX495 or Trident) or honors courses, and have been working with USNA faculty on projects in many areas, including those of interest to the Navy. This unique learning experience allows midshipmen to apply their classroom knowledge to new areas and important problems as well as develop their critical thinking skills. Today, we celebrate their accomplishments and contributions.

POSTER #	MIDN Presenter(s)	Major	Poster Title	Adviser(s)
1	1/C Jacob Dewey	Aerospace Engineering	Performance Characterization of a Modern Gyroplane	R. Niewoehner
2	1/C Matthew Pinney	Aerospace Engineering	Characterizing End Plate Drag on the USNA Eiffel Wind Tunnel	B. Switzer
3	1/C Bradley Stephens	Aerospace Engineering	Determining the Optimal Trajectory For a Lunar Lander Using Modified Clohessy-Wiltshire Relative Motion Equations	J.T. King
4	1/C Julian Olivarez	Aerospace Engineering	Determining the Optimal Trajectory For a Lunar Lander Using Modified Equinoctial Elements	J.T. King
5	1/C John Gale [B]	Aerospace Engineering	Generative Adversarial Network for Classification and Aimpoint Selection of Unmanned Air Vehicles	T. Lim
6	1/C Alec Engl [T]	Aerospace Engineering	Photorealistic Image Generation for Satellite Pose Estimation Using Generative Adversarial Networks	T. Lim, R. Broussard, G. Taylor
7	1/C Raven Heath [B]	Aerospace Engineering	UAV Pose Estimation via Convolution Neural Networks	T. Lim
8	1/C Isabella Penkwitz, 1/C Marina Lazarides	Chemistry	Acute Blood Lactate Response to Interval Exercise with Compression and Cooling	C. Copper, M. Wright
9	1/C Mimi Chin, 1/C Ann Jackson	Chemistry	Addressing Technical Issues Associated with *In Vitro* Selection of RNAs that can Detect Hypoxanthine	D. Morse
10	1/C Darion Isom	Chemistry	Analysis and Comparison of Pen Inks Using Cyclic Voltammetry, Square Wave Voltammetry, and TLC	G. Cheek
11	1/C Daniel Midgette, 1/C Lauren McDonnell	Chemistry	Assessment of Clicker Use in a General Chemistry Course	M. Schroeder, M. Teichert
12	1/C Logan Treaster	Chemistry	Characterization of Arctic River Bacteria by Analysis of 16S Ribosomal DNA Sequencing	C. Sweet
13	1/C Torrance Kang	Chemistry	Computational Investigations of Acetanilide Structures	J. Urban
14	1/C Claire Holmvik	Chemistry	Copper-Catalyzed Trifluoromethylation of Aryl Halides via Concurrent Tandem Catalysis	S. Lin, A. MacArthur
15	1/C Michael Hamilton	Chemistry	Corn-based Biodiesel Mixtures with JP-5	D. Luning Prak
16	1/C Ethan Fessler, 3/C Anders Gulbrandson	Chemistry	Developing a System to Measure the Conductivity of Fiber Welded Polyionic Bicomposites in Controlled Relative Humidity	T. Cosby, A. Aiello, P. Trulove, D. Durkin
17	1/C Lucas Johnson	Chemistry	Development of Vanadium Precursors for Metal Vanadium Oxide Nanocrystals	M. Buck
18	2/C Taylor Forrester, 2/C Hannah Ortiz, 1/C Maddie Peterson	Chemistry	Enzymatic Synthesis of Mycobacterial L,D-transpeptidase Substrates	L. Basta
19	1/C Sophia Schramm	Chemistry	Evaluation of Anti-Corrosion Coatings Using Scanning Electrochemical Microscopy	J. Spencer, R.J. Santucci
20	1/C Breanna Akins, 1/C Andrew Mitchell	Chemistry	Hydrolyzable Tannins of Northern Red Oaks: Separation and Identification	D. Dillner, B. Rehill
21	1/C Caitlyn Koo	Chemistry	Identification and Characterization of the Winter Aquatic Microbiome in the Chesapeake Bay	C. Sweet

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22	1/C Madison Jones, 1/C Turner Morse, 1/C Crawford Smith, 1/C Michelle Therianos	Chemistry	Novel Zr Metal-Organic Frameworks (MOFs) Embedded in Cotton Fibers for the Neutralization of Chemical Warfare Agents	C. Whitaker
23	1/C Michael Schnabel	Chemistry	Preparation and Analysis of Chloroaluminate Ionic Liquids	P. Trulove, T. Cosby, D. Durkin
24	1/C Madison Jones, 1/C Turner Morse, 1/C Crawford Smith, 1/C Michelle Therianos	Chemistry	Synthesis and Combustion Testing of Energetic Boron:PTFE Mixtures	C. Whitaker
25	1/C Samantha Orie	Chemistry	The Role of Short-Range Electron-Molecule Interactions on Ultra-Long-Range Polyatomic Rydberg Molecules	S. Rittenhouse
26	1/C Caitlyn Thompson, 1/C Hazel Acosta	Chemistry	Effects of Tannins from Red Oak Leaves on Growth, Mortality, And Development of Gypsy Moth Larvae	B. Rehill
27	1/C Harrison Foley [T]	Computer Science	Breaking Neural Networks in Common Applications	G. Taylor
28	1/C Elizabeth Gergal [T]	Computer Science	Drone Swarm Tactics using Reinforcement Learning and Policy Optimization	R. Crabbe
29	1/C Harrison Ray	Computer Science	Implementing Resiliency In Exact Matrix Multiplication	D. Roche
30	1/C Brendan Henry	Cyber Operations	Analyzing Firmware in Embedded Devices	D. Brown
31	1/C Jonathan Goohs	Cyber Operations	Reasonable Expectation of Privacy in an IP Address - The Tor Browser and other Anonymization Measures	J. Kosseff, E. Fenske
32	1/C Ryan Grady, 1/C Camille Madion	Cyber Operations	United States and China Cyber Policy: Game Theory	W. Casey
33	1/C Brendan Reilly	Cyber Operations	Preliminary Analysis on the Recruitment Process for Domestic Violent Extremist Groups	A. Edwards
34	1/C Kam Chumley-Soltani	Cyber Operations	Testing Formally Specified Software Requirements for Cybersecurity Regulatory Compliance	J. Kosseff
35	2/C Josh Ralston	Electrical Engineering	Design of a Parallel-Pipeline Architecture for Real-time Lane Detection	H. Ngo
36	1/C Matthew Friedel	Electrical and Computer Engineering	HELPUS: How Entry-Level Programmers Use Synchronization	C. DeLozier, J. Shey
37	1/C Philip Gatbonton [T]	Electrical and Computer Engineering	On the Security of Encryption Implementations in Embedded Devices	T.O. Walker, D. Brown
38	1/C Bryson Horn	Electrical and Computer Engineering	Additively Manufactured Mobile Device Lens Case for 5G Antenna Gain	D. Mechtel, H. ElBidweihy, S. Yee
39	1/C Nathaniel O'Neal [B]	Electrical and Computer Engineering	Characterization of Vertical Gallium Nitride Schottky Diodes	C. Martino
40	1/C Arthur Devine	Electrical and Computer Engineering	Improving Reliability of Reactor Control Rod Systems	D. Opila

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41	1/C Ben Brown	Electrical and Computer Engineering	Lidar and Reflective Barcodes with Mobile Agents	K. Galloway, L. DeVries, C. Nelson
42	1/C Lillian Usadi [T, B]	Electrical and Computer Engineering	Manipulation of Microrobots Using Chladni Plates and Multimode Membrane Resonators	S. Firebaugh, H. ElBidweihy, S. Yee, M. Korman
43	1/C Matthew Beauchamp [B]	Electrical and Computer Engineering	Optically Powered Multi-Robot System Based on Diamagnetic Levitation	H. ElBidweihy, S. Yee, T. Chapman, I. O'Carroll
44	1/C Michael Seymour	Electrical and Computer Engineering	Self-powered High Energy Laser Detectors via Thermoelectric Generators	D. Mechtel, H. ElBidweihy, C. Nelson, P. Joyce, B. Jenkins
45	1/C Matthew Alese [B]	Electrical and Computer Engineering	Characterization of 3D-Printed Scintillators for Portable Radiation Detection and Discrimination	H. ElBidweihy, S. Yee, B. Jenkins
46	1/C Meaghan Allen, 1/C Jeena Bermudez	General Science	Analysis of Glacial Melting in Glacier National Park, Montana	P. Guth
47	1/C Grace Zagaja, 1/C Sophie Gatzounas	General Science	Coastal Erosion on Bald Head Island, NC	P. Guth
48	1/C Morgan Kane	General Science	The Effect of Resolution on Elevation and Slope Data	P. Guth
49	1/C Cassidy Hylton	General Science	Using Lidar to Monitor Coastal Erosion in Southern California	P. Guth
50	1/C Samantha Nassif	General Science	Changes in Tidal patterns in Bay of Fundy's Cobequid Bay and the Effects on future Coastal Engineering	P. Guth
51	1/C John Johnson [T]	Mathematics	Analyzing Error Correcting Codes via Matroid Invariants	M. Wakefield
52	1/C Elana Kozak [T, B]	Mathematics	Monte Carlo Tree Search for a Search Game on a 2-D Lattice	S. Hottovy
53	1/C Philip Smith [T, B]	Mathematics, and Leadership, Ethics, and Law	Predicting USNA Performance using Holistic Personality Analysis in Multidimensional Space	K. Mullaney, W. Traves
54	1/C Andrew Waldron [B]	Mechanical Engineering	Characterization of an Oscillating Bristol Cylinder Wave Energy Converter Prototype Using Image Analysis	L. Luznik
55	1/C Alex Peralta	Mechanical Engineering	Characterization of Atmospheric Optical Turbulence Using Turbulence Flux Measurements	C. Brownell, C. Nelson
56	1/C Madeline Prince [B]	Mechanical Engineering	Computation of Radiation Dose Quantities Using the MCNP6.2 Code	S. McHale, M. Millett
57	1/C Jordan McLaughlin	Mechanical Engineering	Effect of Powder Spheroidization on Select Properties of Additively Manufactured Stainless Steel	M. Koul
58	1/C Matthew Gillcrist [T]	Mechanical Engineering	Effects of Freestream Deceleration on Gas Turbine Film Cooling	R. Volino
59	1/C Zach Nygaard [T]	Mechanical Engineering	Near-Body Velocity Measurements of an Inclined 6:1 Prolate Spheroid	E. Lust
60	1/C Wendy Tao	Mechanical Engineering	Powder Reuse Impact on Quality of Additive Manufactured 316L Parts	E. Retzlaff, J. Gibbs

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61	1/C Justin Budan [B]	Mechanical Engineering	TRISO Fuel Pellet Safety Development	M. Millett, S. McHale
62	1/C Matthew Peshek [B]	Mechanical Engineering	Wave Power Absorption By Oscillating Bodies	L. Luznik
63	1/C Natalie Schieuer [T, B]	Mechanical Engineering	Wireless Electromechanical Power Transfer Using Piezoelectric Materials	J. Radice, J. Burkhardt
64	1/C Samuel Rice [B]	Mechanical Engineering	Characterization of the Stereolithography Method using FormLabs' MaterialsEditor	B. Baker
65	1/C Sarah Nguyen [T, B]	Mechanical Engineering	Parametric Analysis and Optimization of an Elastocaloric Refrigeration Cycle	R. Warzoha, J. Radice, A. Smith
66	1/C Elizabeth Farnan [B]	Nuclear Engineering	Molten Salt Corrosion Capsule Testing in Support of Advanced Reactor Designs	E. Getto
67	1/C Preston Rhodes [B]	Naval Architecture and Ocean Engineering	Air Turbine Testing Device for a Small Wave Energy Converter	A. Gish
68	1/C Sami Bang	Naval Architecture and Ocean Engineering	Experimental Measurements of Wave Forces on Vertical Structures: Effect of Blockage Coefficient and Comparison with Predictive Equations	S. Mouring, T. Johnson
69	1/C Benjamin Leaman	Naval Architecture and Ocean Engineering	Feasibility of On-Demand Manufacturing in Shipbuilding	J. Falls, A. Ibrahim
70	1/C Luke Kustra	Naval Architecture and Ocean Engineering	Hybrid-Aquatic Rotorcraft Seakeeping Project	J. Falls
71	1/C Corey Shideler	Naval Architecture and Ocean Engineering	Impact of Post-Damage Stability on Maneuvering Performance	C. Judge
72	1/C Sarah St. Jean [B]	Naval Architecture and Ocean Engineering	Optimization for Phytoremediating Bioreactor design	J. Falls
73	1/C Joshua Torres	Naval Architecture and Ocean Engineering	Oregon Inlet Flooding Threatens Major Highway	A. Wargula, L. Velásquez Montoya
74	2/C Samantha Chan	Naval Architecture and Ocean Engineering	The Meta-Analysis and Idealistic Modeling of Flexible Vegetation to Attenuate Wave Height for Coastal Protection	T. Johnson, A. Wargula
75	1/C Chris Cassidy	Naval Architecture and Ocean Engineering	Wave Attenuation through Mangrove Living Shorelines	T. Johnson
76	1/C Geraldine Scholl	Naval Architecture and Ocean Engineering	Wave Attenuation through Rigid Vegetation	T. Johnson, J. Falls
77	1/C Sabrina Spracklen [B]	Naval Architecture and Ocean Engineering	WEC Simulation and Test	L. Luznik
78	1/C Lucas Herron, 1/C Madison Lozano	Oceanography	Classifying Tropical Cyclone Intensity by Applying Machine Learning Techniques to USAF WC-130J "Hurricane Hunter" Aircraft Data and Radar Imagery	E. Sanabia
79	1/C Katherine Long	Oceanography (Honors)	Mass Fluxes through Small River Systems on the Alaskan North Slope in Response to Spatial and Temporal Thermodynamic Variations	S. Gallaher, J.P. Smith
80	1/C Haven Cofer	Oceanography (Honors)	Seasonal Variability in Material Fluxes Through Rivers and Streams on the North Slope of Alaska	J. P. Smith, S. Gallaher

POSTER #	MIDN Presenter(s)	Major	Poster Title	Adviser(s)
81	1/C Carter Lorenz	Physics	Characterization of Environment-Dependent Transduction Efficiency of Fluidic Artificial Muscles (FAMs)	E. Chapman
82	1/C Marty D.Y. Schob	Physics	Charged Particle Densities in the Outer Radiation Belt	L. Blum, NASA, J. Larsen
83	1/C Kero Ahling, 2/C Cade Gelhar	Physics	Construction and Operation of a Flicker Polarimeter at the USNA 20" Telescope	J. Larsen
84	1/C Christian Daniel, 1/C Nathaniel Huff	Physics	Constructing a Light Curve for Asteroid 2019 WC5 to Determine Its Period	J. Larsen
85	1/C Jade M. DeSpain	Physics	FRET Study of the Binding of HIV-1 RRE RNA to Rev Peptide	K. Truex
86	2/C Matthew Fox	Physics	Magnetic Properties of Fe-Pd Nanoparticles	E. Cimpoiasu
87	2/C Wesley Nourachi	Physics	Physics-informed Interpretable Machine Learning	K. McIlhany
88	1/C Morgan Bollinger	Physics	Searching for Polarized Lines from AO Cassiopeiae	J. Lomax
89	1/C Alec Grant	Physics	Spin Splitting in Atom-scale Defects in Diamond	P. Brereton
90	1/C Joe Wiedemann [T]	Physics	Superradiance in Spin-active Solid State Defects	S. Rittenhouse, P. Brereton
91	1/C Maddy Bell	Physics	Underwater Ultrasonic Acoustic Imaging	M. Korman
92	1/C Louisa Oney	Physics	Validation of In and Out of Plane Forces in Diamagnetic Levitation	H. ElBidweihy, S. Yee
93	1/C Alex Leland	Physics	β-decay of Promethium-157 into Sammarium-157	D. Hartley
94	1/C Logan Williams [T]	Quantitative Economics	Characterizing The Economic Abundance of Water	K. Swope, R.J. Amador
95	1/C Nate Hersom	Robotics and Control Engineering	Autonomous Formation Control on Non-Convex Closed Shapes	L. DeVries
96	1/C Michelle Silver	Robotics and Control Engineering	Simulation Environment for a Visually Impaired User at the U.S. Naval Academy	P. Jaramillo Cienfuegos
97	1/C Corwin Stites [B]	Robotics and Control Engineering	Unmanned Underwater Vehicle Mobile Mesh Networks - Applications for Hydrographic Surveying	D. Evangelista
98	1/C Jim Kenneally, 1/C Evan Klatt	Robotics and Control Engineering	Utilization of Bio-inspired Fin Structure for the Enhancement of UVV Maneuverability	D. Evangelista
99	1/C Daniel Butchko [T]	Robotics and Control Engineering	Cyber-Physical System Security of Surface Ships using Intelligent Constraints	K. Kiriakidis, B. Croteau
100	1/C Lenny Davis [T]	Robotics and Control Engineering	Tracing Additive Manufacturing Using Machine Vision	M. Kutzer, J. Donnal
101	1/C Cledo Davis	Robotics and Control Engineering, Physics	Modeling and Computer Vision Validation of Tackling Dynamics for Increased Safety and Tackle Effectiveness in Women's Rugby Union	E. Chapman
102	1/C Thomas Maly	Robotics and Control Engineering	Applying Machine Learning to Predict Midshipmen Performance	R. Broussard

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103	2/C Kelly Klettner	Robotics and Control Engineering	Autonomous Surface Vehicle Simulation	P. Frontera, M. Feemster
104	1/C James Anthony	Robotics and Control Engineering	Characterization of Monocopter Performance with Regards to its Airframe Design	G. Piper
105	1/C Marco McGavick	Robotics and Control Engineering	Communications through a Near Maritime Environment using Light carrying Orbital Angular Momentum	S. Avramov-Zamurovic
106	1/C Maria Satre	Robotics and Control Engineering	Diabetes Treatment by Cobelli Parameter Modification	R. O'Brien
107	1/C Riley Hogan	Robotics and Control Engineering	Dynamic Analysis of a High Speed RC Car	J. Dawkins
108	1/C Sofia Di Antonio [B]	Robotics and Control Engineering	Search and Rescue Neural Networks	R. Broussard

T = Trident Scholar
B = Bowman Scholar

Note: Many of these projects are on-going and will be continued in the spring semester. A few posters will not have midshipman presenters (due to conflicts with exams).

More information about midshipman research can be found at:
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Generous support for midshipman research has been provided by the Office of Naval Research (ONR).

Special Thanks to all supporters of Midshipman Research:
USNA Faculty and Staff
USNA ITSD Department
Defense Threat Reduction Agency (DTRA)
Class of ’79 Gift Fund
Class of ’62 Gift Fund