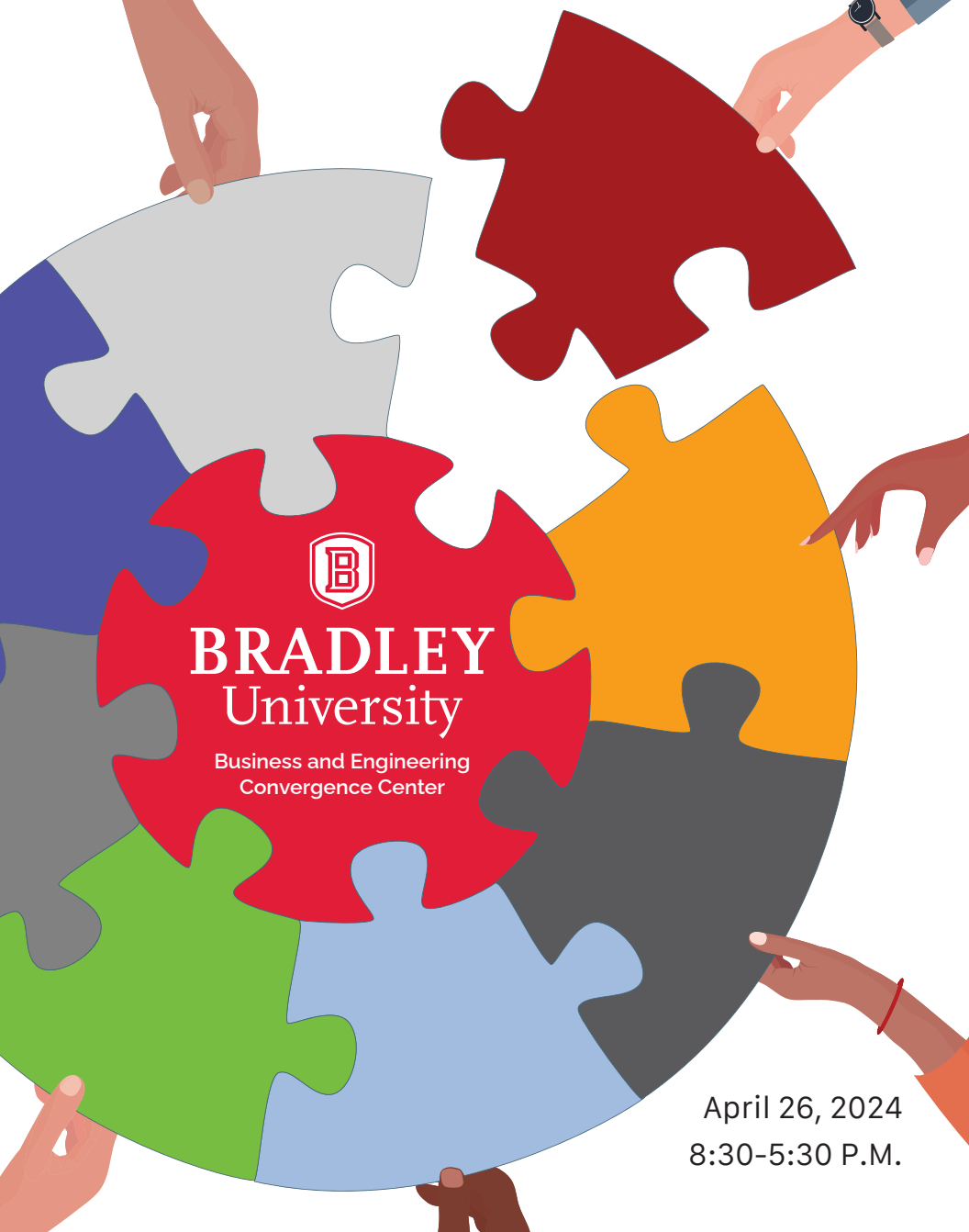


CONVERGENCE

Showcase & CAPSTONE

Open House



BRADLEY
University

Business and Engineering
Convergence Center

April 26, 2024
8:30-5:30 P.M.

WELCOME

On behalf of the faculty, staff, and students of the Foster College of Business and the Caterpillar College of Engineering and Technology, I am pleased to welcome you to the 2024 Business and Engineering Convergence Showcase and Capstone Open House! Today you will see our students showcase their talent through their excellent work in a variety of capstone projects across many disciplines.

Convergence and interdisciplinary work are the cornerstones of our business and engineering academic programs. Convergence is what happens when we bring together people from different disciplines to solve complex problems and produce positive societal impact. It all begins with the intentional design of the Business and Engineering Convergence Center, which is home to the Foster College of Business and the Caterpillar College of Engineering and Technology with a single dean. This creates unique opportunities for our students and empowers them to engage with their peers, faculty, and industry experts in engineering and business.

We prepare our students to think critically across traditional boundaries and disciplines in business and engineering through experiential learning opportunities during their time at Bradley University. The capstone design experience marks the culmination of their experiences at Bradley University, which we celebrate today. This year our students are collaborating with Computer Science and Information Systems in the College of Liberal Arts and Sciences on convergence projects that drive positive societal change in our communities.

I encourage you to take this opportunity to learn about all the exciting things that are going on at Bradley University. Please take a moment to congratulate our students on all their hard work in solving real-world problems with creative, innovative, and impactful solutions.

Thank you for joining us today!

Sincerely yours,



Dr. Kris Maillacheruvu

SCHEDULE

Convergence Showcase

- 8:30 – 9:00 am** Welcome Message
BECC 1150/60
- 9:00 – 9:30 am** Healthcare Restroom Fall Prevention Technology Phase II
BECC 1150/60
- 9:45 – 10:15 am** Greater Des Moines Habitat for Humanity:
Community Aging in Place
BECC 1150/60
- 10:30 – 11:00 am** PeoriaFresh! Food Bank
BECC 1150/60
- 11:15 – 11:45 am** Sustainable Water Management at CAT Facilities
BECC 1150/60
- 11:45 – 12:00 pm** Closing Remarks
BECC 1150/60

Capstone Open House

- 1:15 – 3:00 pm** Poster Presentations: Convergence Projects
BECC 1120/1122
- 1:15 – 3:00 pm** Poster Presentations: Electrical and Computer Engineering
BECC 4240/3rd & 4th Floor Labs
- 1:15 – 3:00 pm** Poster Presentations: Civil Engineering and Construction
BECC 2254/58; 2259
- 1:15 – 3:00 pm** Poster Presentations: Industrial and Manufacturing
Engineering and Technology
BECC 2140
- 1:15 – 3:00 pm** Poster Presentations: Mechanical Engineering
BECC 1150/60
- 1:15 – 3:00 pm** Poster Presentations: Business 400 Capstones
BECC 1170/80; 3140
- 1:15 – 3:00 pm** Computer Science Demonstrations
*BECC 1120/2002/2004/2005, BECC 1240 Makerspace,
Parking Lot next to BECC*
- 2:10 – 2:50 pm** Data Analytics Presentations
BECC 3120
- 3:00 – 3:20 pm** Cybersecurity Presentation / Demonstration
BECC 3120
- 3:00 – 4:30 pm** Faculty Professional Development Grant Presentations
BECC 3160
- 3:30 – 5:30 pm** Economics Theses
BECC 4120

SHOWCASE & CAPSTONE PROJECTS

CONVERGENCE SHOWCASE PROJECTS

1120

PeoriaFresh! Food Bank, Bradley University
Ian Connors, Maxwell W Labus, Joshua Kennedy, Joshua Kordek, Manuel Mendez, Matt Panos, Anna Piskur, Brian Sida, Zachary Swinford, Aidan Wright, Faculty: Dr. Grichnik, Mr. Lockwood, Mr. Cruitt

1122

Sustainable Water Management at CAT Facilities, Caterpillar
Amari J Armand, Matthew B Bassier, Max Bennett, Zachary Chapman, Michael R Cheehy, Bartłomiej Czech, Connor Elens, Patrick J Fishburne, Winona K Hearne, Vicki Lambert, Jackson B Moats, Matthew Sigale, Massimo Vardamaskos, Faculty: Dr. Spelman, Mr. Lockwood, Mr. Cruitt

1120

Community Aging in Place,
Greater Des Moines Habitat for Humanity
Cooper C Denault, Nicole Farrow, Lara Gebel, Osvaldo Guzman, Thomas Janssen, Brianna L Jefferson, Ashley Johnson, Elizabetha A Ondercin, Tatyana G Pacheco, Faculty: Dr. Mandava, Mr. Lockwood, Mr. Cruitt

1122

Healthcare Restroom Fall Prevention Technology Phase II
Seereen Alrefai, Ryan J Bonnette, Jordan N Carlin, Sean A McManis, Eric A Peters, Lydia A Reed, Grant W Simmons, Rachel N Walls, Faculty: Dr. Shastry, Mr. Lockwood, Mr. Cruitt

INDUSTRIAL AND MANUFACTURING ENGINEERING AND TECHNOLOGY CAPSTONE PROJECTS

2140

KK Hub Cutter Tool Management Systems Project, Caterpillar
Joseph F. Hoff, Maria E. Livingston, Richard Kevin O'Hara Jr., Faculty: Dr. Shareef

2140

KK Keyence Scanner Project, Caterpillar
Rylan S. Dellinger, Matthew C. Kacmar, Kerah A. Panzarella, Faculty: Dr. Shareef

2140

OEE Data Analytic Smart Factory in MEUI Injector Assembly, Caterpillar
Katelyn M. Kain, Kelsey M. Kempes, Andrew J. Zora, Faculty: Dr. Shareef

2140

Fuel Injector Valve Stream Transformation, Caterpillar
Garrett R. Hammill, Tommy L. Nguyen, Liam R. Peterson, Faculty: Dr. Shareef

2140

Production Dashboard Usability Testing and Expansion, CNH
Omar Diaz, Jake Hill, Joseph M. Pasyk, Dr. Shareef

2140

Tube Racking Pull System Visual Supermarket, CNH
Jack R. Bryan III, Benjamin Alan Eilers, Max Kras, Faculty: Dr. Shareef

2140

Line 3 Mixed Model Assembly Process, FETCO
Joshua Braker, Ethan Hoffman, Bryant L. Perez, Faculty: Dr. Shareef

CIVIL ENGINEERING & CONSTRUCTION CAPSTONE PROJECTS

2259

Camp Street and Riverside Drive Intersection Improvements, CE 493/498
Hanson Professional Services
Alphonso Avilez, Farin Azim, Billy Koran, Jayce T Rumbold, Instructors: Mr. Culp, Dr. Schattler

2259

Camp Street and Riverside Drive Intersection Improvements, CE 493/498
Peoria River District Engineers (PRDE)
Katrina L. Beier, Julia J. Nielsen, Jacob J. Nora, Sam J. White, Instructors: Mr. Culp, Dr. Schattler

CAPSTONE PROJECTS

2259

Bethany Community Church Addition – Structural Building Design,

CE 493/498 AECOM

Samuel M Lawrence, Cody M Sitterly, Christopher G Weilbaker, Instructors: Mr. Shelton, Dr. Lee

2259

Bethany Community Church Addition – Structural Building Design,

CE 493/498 BECHTEL

German Jr Casas, Amanda B Deyo, Colin Miller, Tadgh Spillane, Instructors: Mr. Shelton, Dr. Lee

2254/58

Greater Peoria Mass Transit District,

CON 493/ 498 Granite Construction

Chance Andell, Justin T Eggleston, Kevin J Escalante, Addison D Pettit, Instructors: Mr. Beaty, Ms. Schupp, Prof. Willis

2254/58

Greater Peoria Mass Transit District,

CON 493/ 498 Essential Construction

Jack G Crull, Hunter Klein, Joshua M Lech, Mason J McCormick, Instructors: Mr. Beaty, Ms. Schupp, Prof. Willis

2254/58

Greater Peoria Mass Transit District,

CON 493/ 498 Turner

Papa K Asamoah, Kareem Castaneda, Alexander B Hamilton, Attilio Levato, Instructors: Mr. Beaty, Ms. Schupp, Prof. Willis

2254/58

Greater Peoria Mass Transit District,

CON 493/ 498 Burly Builders

Zachary Dove, George M Guzlas III, Kelvin Lopez-Uriostegui, Ty Pilon, Adam Wascher, Instructors: Mr. Beaty, Ms. Schupp, Prof. Willis

2254/58

Greater Peoria Mass Transit District,

CON 493/ 498 Midwest Construction Group, Inc.

Garrett Forsythe, Timothy M O'Reilly, Logan M Smith, Mady Yu, Instructors: Mr. Beaty, Ms. Schupp, Prof. Willis

ELECTRICAL AND COMPUTER ENGINEERING CAPSTONE PROJECTS

4242

Next Generation Battery Management System (BMS) Architecture Using Active Balancing, Caterpillar

Huzefa Khan, Albert Shau, Faculty: Dr. Lu, Dr. Wang

4240

IoT Lighting Control System, CSL Technology Solutions

Jerry Decker, John T Gibbs, Faculty: Dr. Malinowski

4261

Real-Time Noise Cancellation in Wideband Receiver Systems

Alicen Barowsky, Nathan Turner, Ian W Wilkey, Faculty: Dr. Lu

3240

Autonomous Navigation of Differential Drive Robot, Electrical and Computer Engineering Department, Bradley University

Tanner J Unruh, Faculty: Dr. Miah, Dr. Shastry

4240

Machine Learning Based Hazard Detection & Warning System for Haul Trucks, Komatsu

Taylor Glass, Amila Rahman, Faculty: Dr. Imtiaz

4241

VIP (Vertically Integrated Projects: Learning Through Multidisciplinary & Integrated Collaboration), Electrical and Computer Engineering Department,

Bradley University

Abdullah Abuissa, Emily Anderson, Ryan Barrack, Phoebe Calabrese, Grant Capel, Andrew Dallinger-Eaker, Maxwell Duffy, Jacob Ebert, Christopher Harris, Isaac Hutley, Owen Joseph, Kyle King, Jonathan Kunz, Adolfo Lopez, Armand Riel Lubadi, Steven Ohlson, Qudus Oyenuga, Samantha Palanos, Laurin Pfeiffer-Happach, Jameson Province, Lukas Rupeika, Artemio Saldivar, Steven Schilsky, Jacob Simeone, Dalton Trulock, Laila Turner, Ty Wilkinson, Faculty: Dr. Imtiaz

CAPSTONE PROJECTS

4281

NASA Robotic Mining Competition: Lunabotics

Roy Alvarez Gonzalez, Caleb A Clague, Michael Garbrecht, Rachel Gottschalk, Andrew M Kamp, Faculty: Dr. Imtiaz, Dr. Malinowski, Mr. Mattus

4240

Industrial Cybersecurity, Electrical and Computer Engineering Department,

Bradley University

Jared Smith, Faculty: Dr. Malinowski

4261

Smart Grid, Electrical and Computer Engineering Department, Bradley University

Cyril M Kumpuckal, Evan J Matravers, Faculty: Prof. Gutschlag, Dr. Wang

4260

Machine Network Using Short Range Wireless Technologies, Caterpillar

Nicholas Manos, Penny Venkat Yarlagadda, Vinay Kumar Yeluru, Faculty: Dr. Shastry

4242

Resilient Communication Schemes for Real-Time Teleoperation Video, Caterpillar

Madhuri Bellamkonda, Michael Garbrecht, Srihitha Guduguntla, Faculty: Dr. Lu, Dr. Wang

4242

Adaptive Real-Time Video Streaming for Teleoperations, Caterpillar

Zuguang Liu, Venkata Varaha Yatesh Makena, Sai Rohith Vavilala, Faculty: Dr. Lu, Dr. Wang

4281

Enhancing Baseball Performance and Safety: The Embedded Center of Pressure Project, Questfit

Dana Kattom, Jared Novak, Faculty: Dr. Malinowski

ECE / CEC CONVERGENCE PROJECT DEMONSTRATIONS (1:30, 2:00, 2:30)

4240

Styrofoam Beam Design and Strain Measurement Test System,

Bradley University

Richard A Harris, Faculty: Dr. Malinowski, Dr. Soltani

MECHANICAL ENGINEERING CAPSTONE PROJECTS

1150/60

Redesign PCU machine, Caterpillar

Michael A Anderson, Joseph R McConnell, Jacob T McConnell, Jose Roman, Faculty: Prof. Brian Barney, Liaison: Dr. Abou-Hanna

1150/60

Improved Meter Stack Phase Balancing, Eaton

Christopher A Faust, Ethan M Fuller, Timothy O'Brien, Alexandros John Psaradellis, Faculty: Prof. Brian Barney, Liaison: Dr. Abou-Hanna

1150/60

Fuel Cell Tilt Table, Caterpillar

Derek D Emerick, Trevor Halsne, Jacob Borland, Garrett J Queenan, Faculty: Prof. Brian Barney, Liaison: Dr. Abou-Hanna

1150/60

Cell Battery Module Design, Caterpillar

Caleb N Alt, Maddie Lee, Jacob A Polowy, Ohm S Vyas, Faculty: Prof. Brian Barney, Liaison: Dr. Abou-Hanna

1150/60

Delta P Test Bench, Caterpillar

Timothy R Dobson, Abigail L Dietrich, Nathan S Grove, Mitchell K Leach, Faculty: Prof. Brian Barney, Liaison: Dr. Abou-Hanna

1150/60

Finger/Digital Pressure Sensor, OSF HealthCare

Brooke V Deckelman, Christian K DeVore, Samuel N Gustafson, Loren R Scott, Faculty: Dr. Kalyani Nair, Liaison: Dr. Kalyani Nair

CAPSTONE PROJECTS

1150/60

Trocar System, OSF HealthCare

*Brendan J Mason, Caleb Lee, Michael Z Larson,
Grant Ganpat, Faculty & Liaison: Dr. Nair*

1150/60

Exoskeleton, OSF HealthCare

*Justin M Rupnow, Samantha Petray,
Jacob H Rak, Donato Sahlas,
Faculty & Liaison: Dr. Nair*

1150/60

Formula SAE Drivetrain, SAE Formula

*James V Perozzi, Liam Hughes,
Jradon W Smith, Jordan E. Tatgenhorst,
Faculty & Liaison: Dr. Nair*

1150/60

Tractor Trailer Landing Gear,

Bohn & Dawson Inc. (BDI)

*Zachary R Abboud, Matthew W Dixon,
Brandon R Johnson, Noah Negron,
Faculty & Liaison: Dr. Abou-Hanna*

1150/60

**Instrumented Clutch Plate Surface
Preparation**, Caterpillar

*Joy C English, Noah M Johnson, Jaron C Postin,
Michael A Siler, Faculty: Dr. Abdalla Elbella,
Liaison: Dr. Abou-Hanna*

1150/60

Toolless Liquid Filter Design, Caterpillar

*James C Medeiros, Paul J Kiefer, Heather Martin,
Peter J Miffiin, Faculty: Dr. Abdalla Elbella, Liaison:
Dr. Abou-Hanna*

1150/60

**Wet Brake Hydraulic Oil Cooling
Optimization**, Komatsu

*Gabriel F Herrera, Victor J Krause, Jackson C
Laney, Ethan B Steiner, Faculty: Dr. Ahmad Fakheri,
Liaison: Dr. Abou-Hanna*

BUSINESS 400 CAPSTONE PROJECTS

1170/80

Synergen Consulting

*Allison M Boroski, Kyra N Doherty, Joshua Falco,
Isabella Fontane, Njofang-Claudiel C Ngongang,
Bradley Wichaël, Faculty: Prof. Walker*

1170/80

BrightStar Academy

*Grace O Aromando, Natalie M Erbs, Zeynep
Ergelmis, Tyler Gold, Juliana Martinez, Roberto
Mendez, Alex Nicastro, Faculty: Prof. Walker*

1170/80

GoodJava

*Nolan L Glenn, Nader Juma, Anthony W Potthoff,
Joshua Solorio, Mark E Weinewuth, Shawn M
Yaeger, Faculty: Prof. Walker*

1170/80

Peoria YMCA

*Christian N Avila, Matthew W Cyran, Josue
Jimenez, Christiana D Marlowe, Gideon B
Macalinga, Noah M Vassall, Faculty: Prof. Walker*

1170/80

Ben Hendricks Trucking

*Yaara Amit, Erick J Hallick, Brent Hester, Anthony
Jurewicz, Camille Lechner, Kowen J Wilhelm,
Faculty: Prof. Walker*

1170/80

Jaspers Java

*Belle Bachtold, Brennan G Cornell, Jonah
Craghead, Austin J Fairall, Matt McDonald,
Thomas G Zschach, Faculty: Prof. Walker*

3140

The Cookery

*Joshua B Garland, Erik Heggem, Alexander M
Hudachko, Henry L Levy, Aleksandra Wesolowski,
Kaylee F Wolfe, Faculty: Prof. Walker*

3140

Morton Audiology

*Josh D Lockhart, Anya Long, Josie Mettes,
Alexander J Rosak, Micah Schultz, Brogan Tolly,
Aman Yadav, Faculty: Prof. Walker*

CAPSTONE PROJECTS

3140

Peoria Production Solutions

*Tom Davis, Nicolas Dominguez, Aaditya Patel,
Max Schmitz, Katherine C Sotomayor, Mike Tracy,
Faculty: Prof. Walker*

3140

Jim Maloof Realty

*Jared S Aviles, Wyatt J Borri, Riley Ford,
Monica J Frank, Michael D Melnick, Justin Smith,
Jack D Stankoskey, Faculty: Prof. Walker*

DATA ANALYTICS CAPSTONE PROJECT

3120

BA Capstone Project: Looking into the Blight Reduction Program (BRP) in Peoria,

City of Peoria

*Jocelyn Avalos, Nathan Hiitola, Kevin Polo, Beza
Tefera, Aleksandra Wesolowski, Aman Yadav,
Faculty: Dr. Zheng*

3120

BA Capstone Project: Addressing Blight Issues in Peoria, City of Peoria

*Nicholas Currier, Nicolas Dominguez, Pavan
Kumar Kagg, Tejaswi Lakkakula, Jacob Morrell,
Brenden Wagner, Seth Winchell,
Faculty: Dr. Zheng*

CYBERSECURITY CAPSTONE PROJECT

3120

The Art of the Attack: Securing Local Businesses Through Red Teaming

*Nicholas Currier, Rylie Forester, Erick J Hallick,
Thomas Janssen, Sebastian Perez, Brenden J
Wagner, Faculty: Dr. Young*

ECONOMICS THESES

4120

Unveiling the Economic Alchemy of Brexit: Analyzing the Trade Transformation in the Post-Policy Shift Era

Presenter: Lara Gebel, Faculty: Dr. Yencha

4120

The Economic Benefits of Energy Infrastructure Investment

Presenter: Matt McDonald, Faculty: Dr. Corbett

4120

Dynamics of Urbanization and Pricing Strategies in the Logistics Industry

Presenter: Robert Nitsch, Faculty: Dr. Yencha

4120

The Effect of the Illinois Homestead Exemption on School Quality

*Presenter: Alex O'Shaughnessy,
Faculty: Dr. Ngwaba*

FACULTY PROFESSIONAL DEVELOPMENT GRANT PRESENTATIONS

3160

Broad-Based Black Economic Empowerment Policy and Entrepreneurship in South Africa

Dr. Chigozie Andy Ngwaba

3160

Standard or Stand Out? Preference over Wearable Fashion Design in the Metaverse

Dr. Chris Yencha

3160

Managerial Behavior of Compliant Reporting Firms: From the Perspectives of Real Earnings Management and Tax Avoidance

Dr. Jason Jiao

3160

Chocolate Case Study

Dr. Shondra Johnson

3160

How Covid-19 Pandemic Moderates the Relationship between Financial Performance and Sustainability (ESG) Disclosure in the Airline Industry? —A Global Study

Dr. Lucy Lu

CAPSTONE PROJECTS

3160

The Valuation Premium Impact of Target Firms' Customer Satisfaction in M&As

Dr. Mehdi Nezami

COMPUTER SCIENCE DEMONSTRATIONS

2002

Analysis of Football (Soccer) Match Data for Competitive Advantage

*Denisha (Isa) Luluquisin, Ethan McKeever,
Zach Posner, Thomas Rush, Doga Topcicek,
Faculty: Prof. Brennan*

2004

Diabetes and Resourceful Testing (DART) Project with UICOMP and CAMTech Uganda

*Cole Evans, Dionte Henderson, Christian Loncka, Trenton Paul, Julian Saldago,
Faculty: Prof. Grichnik*

2005

Expanding Bioinformatics Capability for Bradley University Research

*William Cutter, Carlos Hernandez-Guzman, Carmine Ingram, Michael Lazicki, Israel Oluwale,
Faculty: Prof. Byerly*

1240 Makerspace

Locally Manufactured Robotics Platform for Artificial Intelligence Education

Ali Basalam, Michael Chavis, Wolfgang Gross, Caleb Kahn, Erik Sivertsen, Zach Wilson, Ramiel Yurkovsky, Faculty: Prof. Grichnik

1240 Makerspace

Robotics for Autism Spectrum Disorder (ASD) Living

Anna Breuker, Jasmin Gonzales, David Henvick, Taylor Sims, Faculty: Prof. Mahmud

Parking Lot Next to BECC

Intelligent Trade-Off Process for Embedded Model Performance versus Compute Resources

Vladimir Antonov, Micah Brody, Neil Dighe, Derek Meier, Michael Thorson, Faculty: Dr. Brennan

Parking Lot Next to BECC

Lower-Cost Multispectral Imaging Prototype for an Agricultural Fixed-Wing Drone

*Austin Bennett, Marcus Watson, Martin Watson, Kyle Woodard, Jacob Zydorowicz,
Faculty: Dr. Brennan*

*By attending this event you
hereby consent to having
your photo/likeness/
recordings posted publicly
and on social media.*



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academic/colleges/fcba/
capstone-project](http://bradley.edu/academic/colleges/fcba/capstone-project)