The James J. Slade Scholars Program is a research-based program for students who have maintained above a 3.2 GPA. During their fourth year, each student who has been selected to be a part of the program is required to conduct an independent research study under a faculty advisor and complete a thesis describing their findings. The J.J. Slade Symposium is a culmination of the program, where students have the opportunity to present their work to faculty members and their peers.

**OPENING REMARKS**
Jean Patrick Antoine,  
James J. Slade Scholars Program Director
5:00 – 5:15 pm

**ORAL PRESENTATIONS**
Michael Higgins
Amy Narakornpichit
Alexa Chu
Paul Wang
5:15 – 5:30 pm
5:30 – 5:45 pm
5:45 – 6:00 pm
6:00 – 6:15 pm

**POSTER SESSION**
6:15 – 6:50 pm

**CLOSING REMARKS**
6:50 - 7:00 pm
<table>
<thead>
<tr>
<th>Name</th>
<th>Program</th>
<th>Advisor</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aayush Gandhi</td>
<td>MAE</td>
<td>Prosenjit Bagchi</td>
<td>Development of Computational Models of Retinal Hemodynamics Under Healthy and DR Conditions</td>
</tr>
<tr>
<td>Alexa Chu</td>
<td>BME</td>
<td>Francois Berthiaume</td>
<td>Effects of Simulated Spaceflight on Wound Healing</td>
</tr>
<tr>
<td>Amy Narakornpichit</td>
<td>BME</td>
<td>Gary Drzewiecki</td>
<td>Relation of Heart Rate Variability to Cardiovascular Disease: A Modeling Approach</td>
</tr>
<tr>
<td>Anes Younis</td>
<td>CEE</td>
<td>Jie Gong</td>
<td>An Evaluation of Air Quality on Construction Sites</td>
</tr>
<tr>
<td>Bryan Zhu</td>
<td>ECE</td>
<td>Mehdi Javanmard</td>
<td>Wearable Spectrophotometer for Hematocrit Measurement Aimed at Anemia and Dehydration Monitoring</td>
</tr>
<tr>
<td>Chinwendu Chukwu</td>
<td>BME</td>
<td>Joseph Freeman</td>
<td>Development of Collagen-Binding PNIPAAm Nanoparticles for Applications to Strain Injury</td>
</tr>
<tr>
<td>Declan O’Brien</td>
<td>MAE</td>
<td>Aaron Mazzeo</td>
<td>Damage Detection and Location Using Time of Flight Depth Cameras</td>
</tr>
<tr>
<td>Dev Patel</td>
<td>MAE</td>
<td>Ahmed Aziz Ezzat Ahmed</td>
<td>Autonomous Inspection and Reliability of Renewable Energy Assets</td>
</tr>
<tr>
<td>Devon Whitehead</td>
<td>CEE</td>
<td>Hani Nassif</td>
<td>Bond Performance of UHPC with Concrete Substrate Layers</td>
</tr>
<tr>
<td>Hosssain Ahmad</td>
<td>MSE</td>
<td>Haym Benaroya</td>
<td>The Engineering Perspective of Biological Challenges to Humans in the Lunar Environment</td>
</tr>
<tr>
<td>Jake Dechiara</td>
<td>BME</td>
<td>Ahmad Safari</td>
<td>Review of Piezoelectric Composite Materials</td>
</tr>
<tr>
<td>Jorden Xavier</td>
<td>ECE</td>
<td>Michael Dunn</td>
<td>Biomechanical Evaluation of 4-Strand vs. 5-Strand Hamstring Autografts for ACL Reconstruction</td>
</tr>
<tr>
<td>Joseph Shenouda</td>
<td>ECE</td>
<td>Waheed Bajwa</td>
<td>Learning Hypergraph Topology from Data</td>
</tr>
<tr>
<td>Julian Bowne</td>
<td>MAE</td>
<td>Annalisa Scacchioli</td>
<td>Data-Driven Traction Control for an Autonomous Martian Rover</td>
</tr>
<tr>
<td>Kariman Shama</td>
<td>MAE</td>
<td>Biju Parekkadan</td>
<td>Predictive Modeling for the Pharmacokinetics of Secreted Factor VIII and Factor IX Using AAV</td>
</tr>
<tr>
<td>Konrad Scroger</td>
<td>BME</td>
<td>Haim Baruh</td>
<td>Analysis of Altimetry System Error</td>
</tr>
<tr>
<td>Luis Ramirez</td>
<td>MAE</td>
<td>Francois Berthiaume</td>
<td>Optimizing Cellular Metabolism to Improve Chronic Skin Wound Healing</td>
</tr>
<tr>
<td>Michael Higgins</td>
<td>MAE</td>
<td>Laurent Burlion</td>
<td>A Learning-based Explicit Reference Governor for Constrained Control of a UAV</td>
</tr>
</tbody>
</table>
Research Scholars

MOHAMED ELASHAKY  
BME, Advisor: Edward DeMauro  
High-Speed Schlieren Imaging of Supersonic Flow Past a Wall-Mounted Hemisphere With Turbulent Boundary Layer Impingement

NATALIA CASTRO  
MAE, Advisor: Maribel Vazquez  
Modeling Degenerative Retinopathies with Müller Glia Derived from Induced Pluripotent Stem Cells

PAUL WANG  
BME, Advisor: Howon Lee  
Material Selection for Bio-inspired Self-Anchorling Microneedles

RAHUL PEMMARAJU  
ECE, Advisor: Vidya Ganapathy  
Quantitative Analysis of the Tumor Immune Burden Using Targeted Nanoprobes

REBECCA GOLM  
ECE, Advisor: Wade Trappe  
Analysis of COVID-19 Models To Determine Key Factors in Treatment

SHANE LECOMPTE  
MAE, Advisor: Annalisa Scacchioli  
Stochastic Trajectory Optimization of a Swarm of Spacecraft for Applications to the Exploration of the Rings of Saturn

WEIHAO CHENG  
MAE, Advisor: German Drazer  
Simulation Studies of Particle-Laden Flows Around a Cylindrical Obstacle

CAMIL ANDRUCH  
MAE, Advisor: Francisco Diez Garias  
Multirotor Drone Endurance and Performance Predictions

RENNATO HERRERA  
MAE, Advisor: Laurent Burlion  
Fault-Tolerant Advanced Control Algorithm with Applications

ACKNOWLEDGEMENTS

Thank you to the J.J. Slade Faculty Committee of Vidya Ganapathy, Alina Thokkadam, Ahmed Aziz Ezzat, and Hani Nassif for their help evaluating the presentations, as well as the Office of Student Services at the School of Engineering.