

# Justin Dulay

<https://dulayjm.github.io>

University of Notre Dame ♦ Notre Dame, IN 46556

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## EDUCATION

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### University of Notre Dame

June 2021 - Present

Ph.D. in Computer Science & Engineering

Advisor: Prof. Walter Scheirer

Dean's Fellow

### Saint Louis University

August 2017 - May 2021

B.S. in Computer Science

Research Advisor: Prof. Abby Stylianou

## RESEARCH INTERESTS

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Psychophysics, Computer Vision, Machine Learning, Deep Learning, Algorithms

## AWARDS & HONORS

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Dean's Fellowship at Notre Dame

- *Fully university-funded research and stipend for a min. of 5 years*

- *Valued at over \$350,000*

- *Most selective graduate fellowship at Notre Dame*

Vice President's Scholarship at Saint Louis University

- *Valued at over \$150,000 over 4 years*

James Costigan Fellowship at Saint Louis University

## PUBLICATIONS

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### Journal Publications

J.1. *submitted*

J.2. *submitted*

### Peer-Reviewed Conference Workshop Papers

C.1. Justin Dulay, Chao Ren, Greg Rowles, Abby Stylianou, "The Sorghum-100 Dataset" to appear at the CVPR Workshop on Fine-Grained Visual Categorization (FGVC8), 2021

C.2. Chao Ren, Justin Dulay, Greg Rowles, Duke Pauli, Nadia Shakoor, Abby Stylianou, "Multi-resolution Outlier Pooling for Sorghum Classification" CVPR Workshop on Agriculture Vision, 2021

### Pre-prints

P.1. Jin Huang, Derek Prijatelj, Justin Dulay, Walter Scheirer, "Measuring Human Perception to Improve Open Set Recognition", 2022

P.2. Justin Dulay, Sonia Poltoratski, Till Hartmann, Samuel Anthony, Walter Scheirer, "Guiding Machine Perception with Psychophysics", 2022

## WORK EXPERIENCE

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### **University of Notre Dame**

*Graduate Research Assistant*

June 2021 - Present

*Notre Dame, IN*

- Worked with Dr. Scheirer on new computer vision research, specifically in visual psychophysics, cognitive science, reinforcement learning, and autonomous vehicles.

### **Saint Louis University**

*Research Assistant*

May 2020 - May 2021

*St. Louis, MO*

- Worked on state-of-the-art artificial intelligence image infilling techniques on occluded images, potentially creating virtually infinite training sets.
- Published two papers as an undergraduate at CVPR workshops, mostly in agriculture science and dataset curating.
- Created a iOS mobile app that utilized multiple cameras simultaneously in order to capture crops at different angles. It also utilized the LiDAR technology on the Apple iPhone 11 Pro Max.
- Research directly benefited TraffickCam, a non-profit designated to stop human trafficking using artificial intelligence to track down perpetrators.

### **MEDLaunch**

*President*

September 2018 - April 2021

*St. Louis, MO*

- Led a student incubator of more than 50 medical and engineering students, managed finances of the organization, and strategized with a premier board of directors.
- Interviewed candidates, tracked performance, and committed to leading a diverse and equitable environment.

### **Centene Corporation**

*Software Developer Intern*

May 2019 - May 2020

*St. Louis, MO*

- Wrote microservices in Go in a highly agile environment for Centene's TruCare NextGen project, a comprehensive insurance claims and health management platform.
- Worked stories from beginning to end – from development and peer review to deployments in production, utilizing a microservices architecture with Go, Jenkins, and Kubernetes.

### **SoHeart**

*Software Developer*

May 2020 - October 2020

*St. Louis, MO*

- Worked on front end iOS Swift Development for a startup that specialized in developing an app to connect people in addiction recovery with care counselors and providers in a fresh, appealing, and dignified environment.

### **United States Food and Drug Administration**

*ORISE Fellow*

May 2018 - August 2018

*St. Louis, MO*

- Developed methods for chemometrics of Raman spectral data for pharmaceutical assays, including machine learning, PCA, KNN, and PLS regression models.
- Utilized various backscattering and transmission Raman spectroscopic instruments.
- Drafted a scientific publication detailing a novel method to non-destructively screen for pharmaceutical degradation in compounding facilities.

## TECHNICAL STRENGTHS

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<b>Computer Languages</b>	Python, Swift, Go, C/C++, Java
<b>Protocols</b>	Agile, Kubernetes, CI/CD Jenkins pipeline
<b>Databases</b>	MySQL, MongoDB, Microsoft SQL
<b>Skills</b>	Project Management, Public Speaking, Writing

## INVITED TALKS

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### **Poster Presentations**

“The Sorghum-100 Dataset” with Abby Stylianou, poster presentation at the CVPR Workshop on Fine-Grained Visual Categorization (FGVC8), Virtual, June 2021.

## ACADEMIC SERVICE

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### **Professional and Academic Membership**

Student member of the IEEE

### **Academic Service**

Reviewer, ECCV 2022