Department of Computer Science

Appalachian State University

ABET Accredited

B.S. in Computer Science

M.S. in Computer Science

compsci.appstate.edu

More than $4M funding from the NSF since 2002 to support student programs

NSF S-STEM joint CS and Math Scholarship Program since 2002

McKinney Scholarship Program

ECRS Scholarship Program

50+ undergraduate presentations at the regional and national conferences since 2002

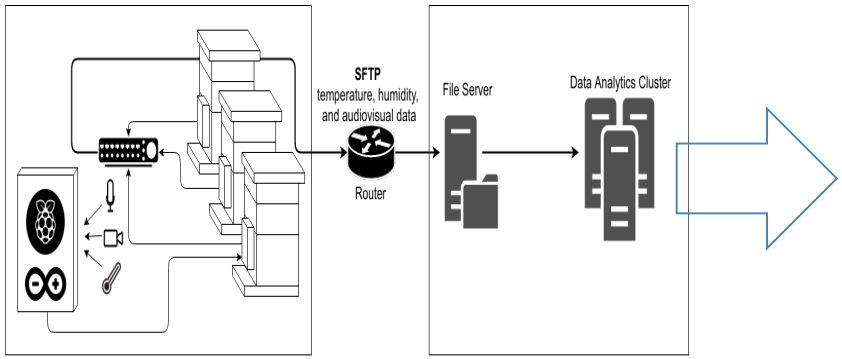
~100% job placement

PhD students at Clemson, UNC Chapel Hill, NC State, Indiana University, UNC Charlotte, …

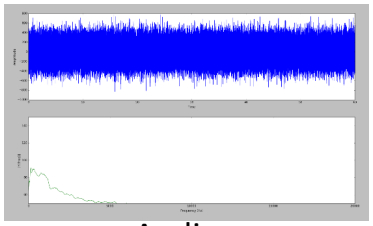
World Leader in Functional Programming and honey bee monitoring systems

The Honey Bee Monitoring (BeeMon) System

In recent years beekeepers have faced significant losses of their populations of managed honey bees, a phenomenon known as Colony Collapse Disorder (CCD). BeeMon was created in the Visual and Image Processing (VIP) lab for remote monitoring of bee hives. The system not only allows beekeepers to observe their hives, it also provides significant data to researchers in the field.

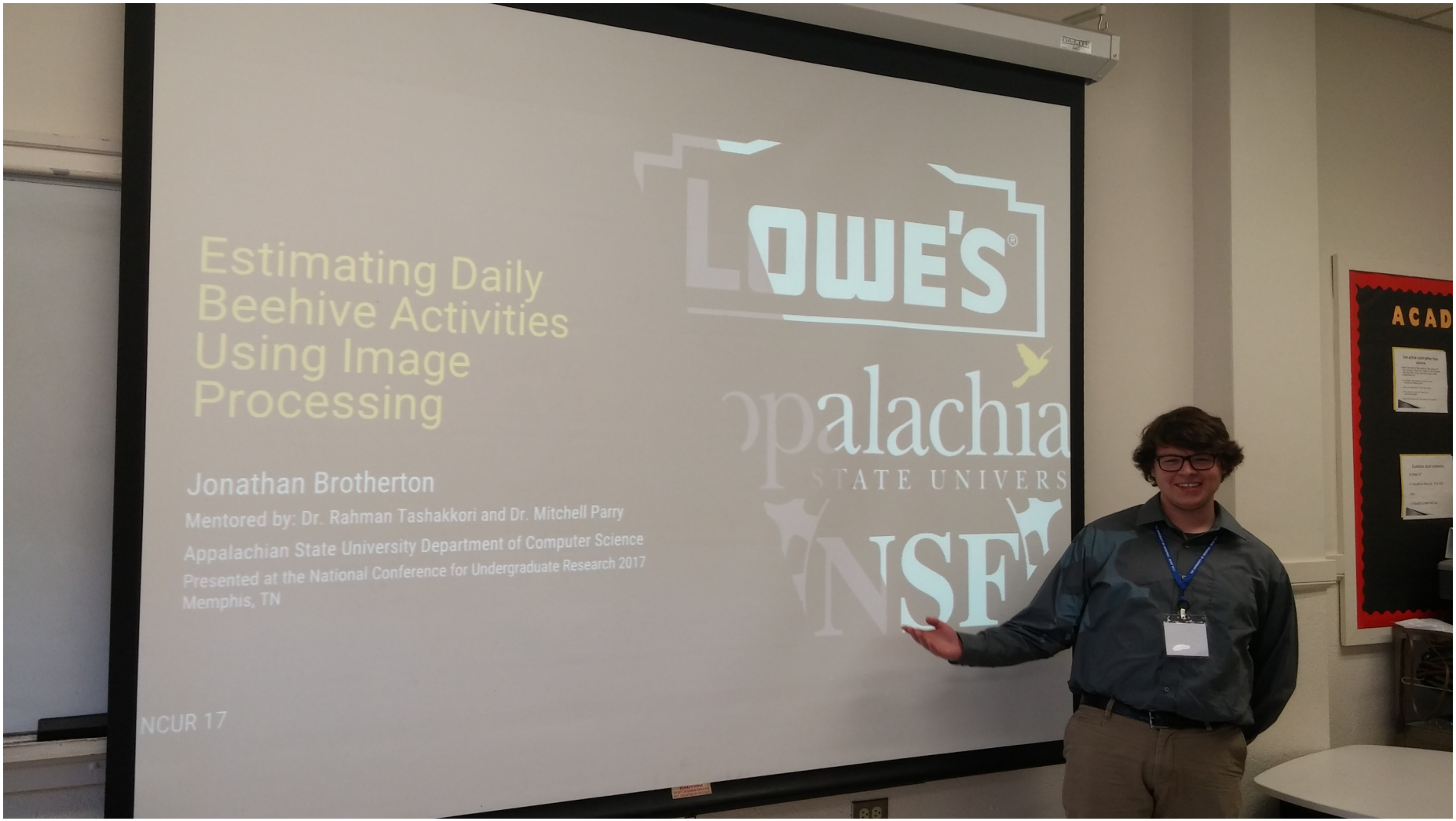


Video



Audio


The University of Memphis
Welcomes NCUR 2017
MICHAEL D. ROSE THEATRE LECTURE HALL
cs.appstate.edu
Department of Computer Science
Appalachian State University


Estimating Daily Beehive Activities Using Image Processing
Jonathan Brotherton
Mentored by: Dr. Rahman Tashakkori and Dr. Mitchell Parry
Appalachian State University Department of Computer Science
Presented at the National Conference for Undergraduate Research 2017
Memphis, TN
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Honeybee Acoustics
Frequency Analysis
Preston Wilson and Chris Smith
Mentored by: Dr. Rahman Tashakkori and Dr. Mitchell Parry
Appalachian State University Department of Computer Science
Presented at the National Conference for Undergraduate Research
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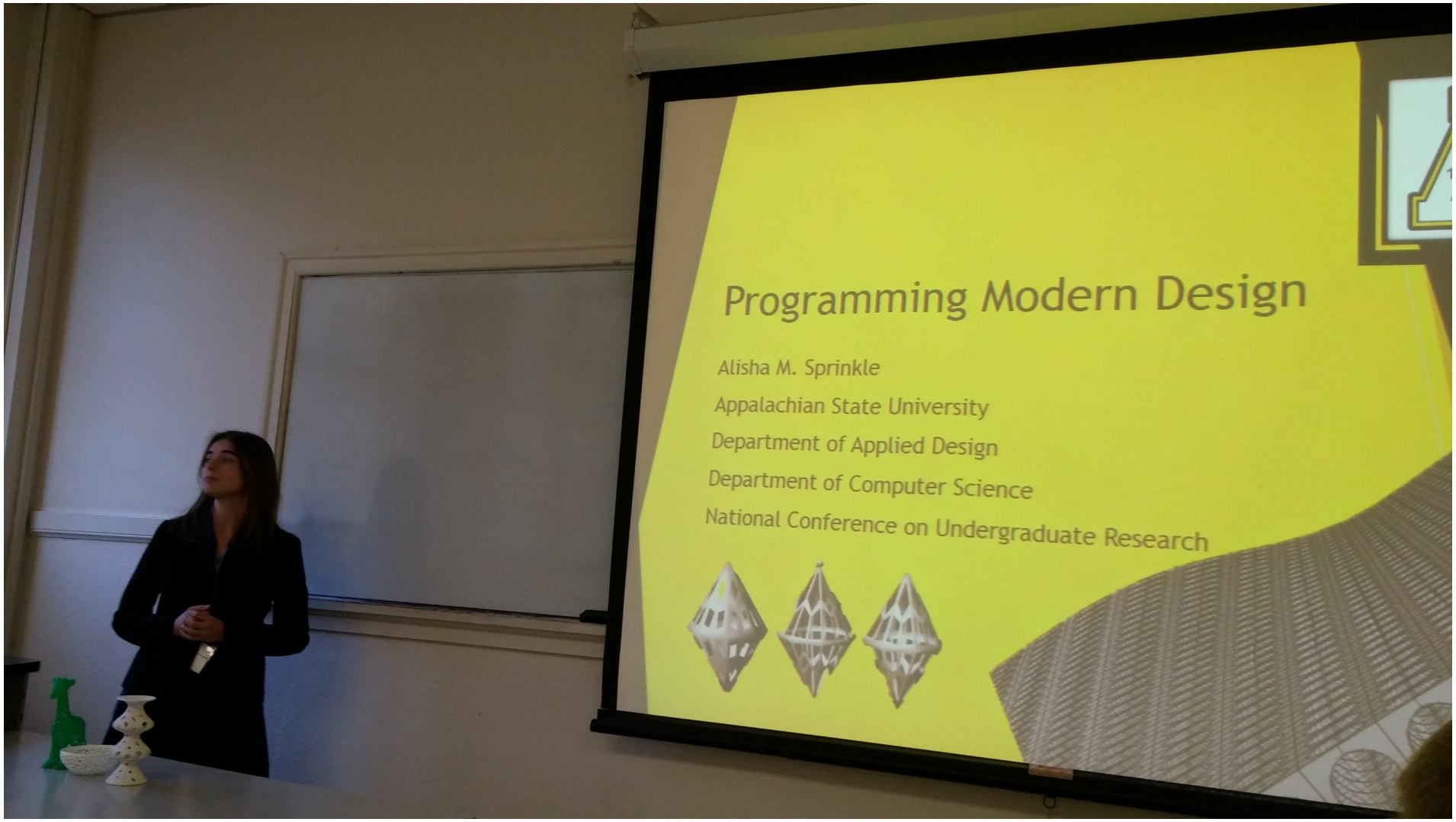
Programming Modern Design
Alisha M. Sprinkle
Appalachian State University
Department of Applied Design
Department of Computer Science
National Conference on Undergraduate Research


U.S. Space & Rocket Center
Huntsville, Alabama
NASA
NASA
TOR CENTER


Preliminary Analysis
of
Honey Bee Film
LaTaunya Tillman
Mentored by:
Dr. Rahman Tashakkori Appalachian State University
Department of Computer Science and Dr. Jennifer Gaib
Appalachian State University Department of Biology
Presented at the National Conference for Undergraduate Research 2017
Memphis, TN
NCUR 17


Determining the Net Traffic at the Entrance of a Honeybee Hive
Problem: Data Analytics
Beemon produces 240 one-minute videos for each hive every day. Currently, we have 5 active honeybee hives producing video data. This means we produce approximately
20 Hours of Video Data Per Day
In order to produce useful data and recognize patterns of behavior, we need a common, reliable, qualitative metric by which to judge each beehive.
Solution: Computer Vision
Abstract
One of the primary projects in the Visual and Image Processing (VIP) lab in the Department of Computer Science at Appalachian State University is Bee Monitoring (Beemon). The Beemon project studies honeybee behavior using video recordings obtained at the entrance of hives. The goal is to detect the collapse of honeybee hives by studying the traffic at the entrance. As part of the project, we collect live video from a number of beehives. Once the data is collected, we manually analyze the video recordings to make observations on honeybee activities.
Our Metric: Traffic at the Hive Entrance
Our primary metric for hive health was developed as a result of the qualitative observations usually made when viewing a video of a hive entrance. When observing a beehive, you normally ask the question:
How much activity is at the Entrance?
The activity at the entrance can indicate problems WITHIN the hive. The entrance of a hive can indicate the active population, population of drones, and leadership of a hive.
Solution: Beet and Beevee
Significance of the Traffic at the Hive Entrance
Changes in activity at the entrance of a hive can indicate the following:
- Decreased activity = potential reduction in hive population
- Increased activity = potential preparation for a "swarm"
- Large numbers of bees at entrance = hot day
- Large numbers of drone bees = potentially food-scarce time
- Consistent decrease in activity = dying hive
- Fewer bees departing than arriving = bees dying away from
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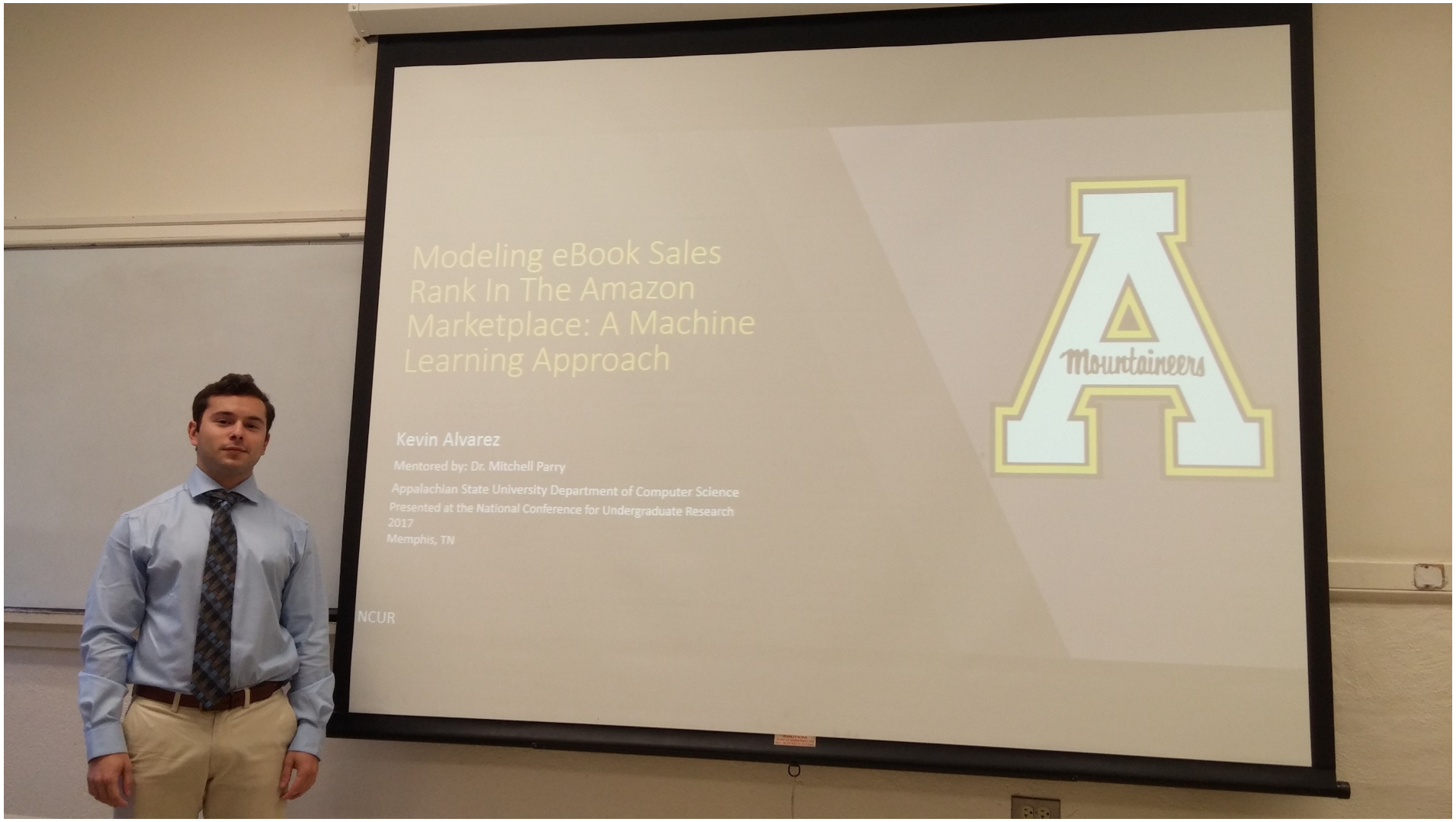
THE UNIVERSITY OF MEMPHIS


Modeling eBook Sales Rank In The Amazon Marketplace: A Machine Learning Approach
Kevin Alvarez
Mentored by: Dr. Mitchell Parry
Appalachian State University Department of Computer Science
Presented at the National Conference for Undergraduate Research 2017
Memphis, TN
Mountaineers
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Department of Computer Science

Appalachian State University

Where do our students work?

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IBM
Google
Amazon
CGI Software
Lowe's Companies
ECRS Software
Wells Fargo
Fidelity
Bank of America
Premier, Blue Cross Blue Shield, Appalachian State University, Samaritan Purse, ….