

TEMPESTT NEAL - CURRICULUM VITAE

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1 EDUCATION

PH.D., COMPUTER ENGINEERING

University of Florida, Gainesville, Florida USA (Ph.D. Advisor: [Damon L. Woodard](#))

M.S., COMPUTER SCIENCE

Clemson University, Clemson, South Carolina USA

B.S., COMPUTER SCIENCE, MINOR IN MATHEMATICS

South Carolina State University, Orangeburg, South Carolina USA

2 RESEARCH AREAS

User authentication, mobile and IoT-based biometrics, biometrics, mobile / ubiquitous sensing, applied machine learning, text analytics, stylometry

3 APPOINTMENTS

TENURE-TRACK ASST. PROFESSOR	University of South Florida	Aug 2018 – Current
RESEARCH ASSISTANT	University of Florida	Jan 2015 – Aug 2018
RESEARCH ASSISTANT	Clemson University	Jan 2013 – Dec 2014
MOBILE APPLICATION DEVELOPER	Creative Inquiry Team, Clemson University	May 2013 – Dec 2013
TEACHING ASSISTANT	Clemson University	Aug 2012 – Dec 2012
SOFTWARE ENGINEER INTERN	Savannah River Remediation, LLC	May 2011 – Aug 2011
WEBSITE AND MARKETING INTERN	The Nature Conservancy	May 2010 – Aug 2010
HBCU-UP INTERN, NSF HBCU - UNDER-GRADUATE PROGRAM	SC State University	May 2009 – Aug 2009

4 STUDENT ADVISING

4.1 PH.D. AND M.S. ADVISEES

1. Topic TBD
Wilson Lozano (Ph.D., In progress)
2. Gait Analysis Using Wearable Devices
Steven Diaz (Ph.D., In progress)
3. Cross-Target and Cross-Dataset Stance Detection
Parush Gera (Ph.D., In progress)
4. Human Behavior Recognition with Wireless Signals
Sayde King (Ph.D., In progress)
5. IoT-Based Biometrics
Mohamed Ebraheem (Ph.D., In progress)
6. Opinion Mining and Information Spread
Meghna Chaudhary (Ph.D., In progress)
7. [Toward Culturally Relevant Emotion Detection Using Physiological Features](#)
Khadija Zanna (M.S., 2020), IBM

4.2 SUPERVISORY COMMITTEE MEMBER

1. Using High Order Spanning Trees to Improve Dimensionality Reduction while Preserving Structure
Curtis Davis (M.S., In progress), Committee Chair: Paul Rosen
2. Adaptive Mobile EEG Noise Cancellation Using 2D Convolutional Autoencoders for BCI Authentication
Tyree Lewis (M.S., 2021), Committee Chair: Marvin Andujar
3. [Pain Recognition Performance on a Single Board Computer](#)
lyonna Tynes, (M.S., 2021), Committee Chair: Shaun Canavan
4. [Exploring the Use of Neural Transformers for Psycholinguistics](#)
Antonio Laverghetta (M.S., 2021), Committee Chair: John Licato
5. URM Women Faculty Hiring in Engineering
Laura Owczarek (Ph.D., In progress), Committee Chair: Amber Dumford
6. Impact of Age on Expression Recognition
Sk Rahatul Jannat (Ph.D., In progress), Committee Chair: Shaun Canavan
7. Fostering Research and Innovation in Public Transportation: A Data Driven Approach
Jennifer Adorno (Ph.D., In progress), Committee Chairs: Miguel Labrador and Sean Barbeau
8. GPU Accelerated Community Detection on Social Stream
Shen Lu (Ph.D., In progress), Committee Chair: Les Piegł
9. [Algorithms to Profile Driver Behavior from Zero-Permission Embedded Sensors](#)
Bharti Goel (Ph.D., 2020), Committee Chair: Sriram Chellappan
10. [Detecting Digitally Forged Faces in Online Videos](#)
Neilesh Sambhu (M.S., 2019), Committee Chair: Shaun Canavan
11. [Multimodal Emotion Recognition using 3D Facial Landmarks, Action Units, and Physiological Data](#)
Diego Fabiano (M.S., 2019), Committee Chair: Shaun Canavan

4.3 UNDERGRADUATE ADVISING AND LAB VOLUNTEERS

1. Nicolas Ng Wai, REU Student, 2020-Current
2. Dong Jun Kim, UG, 2021-Current
3. Sue Dang, UG, 2021-Current
4. Frances Castro, UG, 2021
5. Ajay Chekuri, MS, 2020
6. Nadia Thomas, UG, 2019-2020
7. Lakshmi Angara, UG, 2019-2020
8. Valesia Davis, REU Student, Summer 2019
9. Matthew Sumpter, REU Student, Summer 2019
10. Vineeth Cherukupally, MS, 2018-2019
11. Gurpreet Kaptan, MS, 2018-2019

5 RESEARCH FUNDING

Total Funding: ≈\$1.467M, Neal Portion: ≈\$374K

1. *Up To Me: Erasing the Stigma of Mental Illness on College Campuses*
Co-PI, National Institute on Disability, Independent Living, and Rehabilitation Research, Award #90IFRE0056-01-00
9/2021–8/2024, \$600,000 (**Neal Portion: ≈\$137K**)
2. *Social Media Micromoments*
PI, USF BEST Program
8/2021–5/2022, \$25,000 (**Neal Portion: ≈\$19K**)
3. [Collaborative Research: SaTC: CORE: Medium: Toward Age-Aware Continuous Authentication on Personal Computing Devices](#)
PI, National Science Foundation, Award #2039373

- 4/2021–3/2023, \$533,292 (USF Portion: \$261,966 plus REU Supplement: \$15,840 [Total: \$277,806], (**Neal Portion: ≈\$139K**)
4. [RAPID: Early Detection of Disease Outbreaks using Self-Organizing Patterns - COVID-19](#)
Co-PI, National Science Foundation, Award #2028051
 5/2020–4/2022, \$200,000 (**Neal Portion: ≈\$29K**)
 5. *Social Media Trend Analysis to Explore Racial Disparities in the Treatment, Perceptions, and Tracking of COVID-19*
PI, Microsoft AI for Health
 6/2020–1/2022, (**Neal Portion: \$30K Azure Computing Credits**)
 6. *Exploring Racial Disparities in the Treatment, Perceptions, and Tracking of COVID-19 through Automated Stigma Detection and Sentiment Analysis of Social Media Data*
PI, USF COVID Rapid Response
 6/2020–5/2021, \$25,000 (**Neal Portion: ≈\$20K**)
 7. *Bending the Mental Distress Curve Among COVID-19 Responders: A Pilot Feasibility Study*
Co-I, USF COVID Rapid Response
 08/2020 – 08/2021, \$24,190 (**Neal Portion: In-Kind Effort**)
 8. *Game On: Grooming Black Youth for Leadership Excellence Using Video Gaming*
Co-PI, USF Understanding and Addressing Blackness and Anti-Black Racism in Local, National, and International Communities Research
 9/2020 – 9/2021, \$30,000 (**Neal Portion: In-Kind Effort**)

6 RESEARCH PUBLICATIONS

6.1 REFEREED CONFERENCE PAPERS

1. T. Neal, D. Woodard and A. D. Striegel. [Mobile Device Application, Bluetooth, and Wi-Fi Usage Data as Behavioral Biometric Traits](#), *2015 IEEE 7th International Conference on Biometrics Theory, Applications and Systems (BTAS)*, Arlington, VA, 2015, pp. 1-6. doi: 10.1109/BTAS.2015.7358777.
2. T. Neal and D. L. Woodard. [Spoofing Analysis of Mobile Device Data as Behavioral Biometric Modalities](#), *2017 IEEE International Joint Conference on Biometrics (IJCB)*, Denver, CO, 2017, pp. 62-70. doi: 10.1109/BTAS.2017.8272683.
3. T. Neal and D. L. Woodard. [Using Associative Classification to Authenticate Mobile Device Users](#), *2017 IEEE International Joint Conference on Biometrics (IJCB)*, Denver, CO, 2017, pp. 71-79. doi: 10.1109/BTAS.2017.8272684.
4. T. Neal and D. L. Woodard. [A Gender-Specific Behavioral Analysis of Mobile Device Usage Data](#), *2018 IEEE 4th International Conference on Identity, Security, and Behavior Analysis (ISBA)*, Singapore, 2018, pp. 1-8. doi: 10.1109/ISBA.2018.8311459.
5. T. Neal, K. Sundararajan and D. Woodard. [Exploiting Linguistic Style as a Cognitive Biometric for Continuous Verification](#). *2018 International Conference on Biometrics (ICB)*, Gold Coast, QLD, 2018, pp. 270-276. doi: 10.1109/ICB2018.2018.00048.
6. K. Sundararajan, T. Neal and D. Woodard. [Style Signatures to Combat Biometric Menagerie in Stylometry](#). *2018 International Conference on Biometrics (ICB)*, Gold Coast, QLD, 2018, pp. 263-269. doi: 10.1109/ICB2018.2018.00047.
7. T. Neal and D. L. Woodard. (2018) [On the Use of Mobile Calling Patterns for Soft Biometric Classification](#). *IEEE 9th International Conference on Biometrics Theory, Applications and Systems (BTAS 2018)*, Redondo Beach, CA, USA, 2018, pp. 1-6. doi: 10.1109/BTAS.2018.8698591.
8. T. Neal and D. Woodard. [Mobile Biometrics, Replay Attacks, and Behavior Profiling: An Empirical Analysis of Impostor Detection](#). *2019 International Conference on Biometrics (ICB)*, Crete, Greece, 2019, pp. 1-8. doi: 10.1109/ICB45273.2019.8987407.
9. T. Neal, M. A. Noor, P. Gera, K. Zanna and G. Kaptan. [Authenticating Phone Users Using a Gait-Based Histogram Approach on Mobile App Sessions](#). *2019 International Conference on Biometrics (ICB)*, Crete, Greece, 2019, pp. 1-7. doi: 10.1109/ICB45273.2019.8987418.
10. B. M. S. B. Talukder, B. Ray, V. Menon, Md T. Rahman, and T. Neal. [Towards the Avoidance of Counterfeit Memory: Identifying the DRAM Origin](#). *IEEE International Symposium on Hardware Oriented Security and Trust (HOST 2020)*.
11. S. King, M. Ebraheem, K. Zanna and T. Neal, [Learning a Privacy-Preserving Global Feature Set for Mood Classification Using Smartphone Activity and Sensor Data](#),” in 2020 15th IEEE International Conference on Automatic Face and

- Gesture Recognition (FG 2020) (FG), Buenos Aires, AR, 2020 pp. 660-664.
12. T. Neal and S. Canavan, [Mood Versus Identity: Studying the Influence of Affective States on Mobile Biometrics,](#)” in 2020 15th IEEE International Conference on Automatic Face and Gesture Recognition (FG 2020) (FG), Buenos Aires, AR, 2020 pp. 578-582.
 13. P. Gera, N. Thomas, and T. Neal. 2020. [Hesitation While Posting: A Cross-Sectional Survey of Sensitive Topics and Opinion Sharing on Social Media.](#) In International Conference on Social Media and Society (SMSociety’20). Association for Computing Machinery, New York, NY, USA, 134–140.
 14. T. Neal and A. Patel, [A Brief Literature Review and Survey of Adult Perceptions on Biometric Recognition for Infants and Toddlers,](#) 2020 IEEE International Joint Conference on Biometrics (IJCB), Houston, TX, USA, 2020, pp. 1-10, doi: 10.1109/IJCB48548.2020.9304868.
 15. S. R. Jannat, D. Fabiano, S. Canavan, T. Neal (2021) [Subject Identification Across Large Expression Variations Using 3D Facial Landmarks.](#) In: Del Bimbo A. et al. (eds) Pattern Recognition. ICPR International Workshops and Challenges. ICPR 2021. Lecture Notes in Computer Science, vol 12661. Springer, Cham. https://doi.org/10.1007/978-3-030-68763-2_1.
 16. M. Sumpter and T. Neal. [User Perceptions of Article Credibility Warnings: Towards Understanding the Influence of Journalists and AI Agents.](#) MEDiate 2021 in conjunction with the 15th International AAI Conference on Web and Social Media (ICWSM).
 17. K. Zanna, T. Neal, and S. Canavan. 2021. Clustering of Physiological Signals by Emotional State, Race, and Sex. In Proceedings of the 2021 International Conference on Multimodal Interaction (ICMI ’21), October 18–22, 2021, Montréal, Canada. ACM, New York, NY, USA, 4 pages.

6.2 REFEREED JOURNAL ARTICLES

1. T. Neal and Woodard, D. L. (2016). [Surveying Biometric Authentication for Mobile Device Security.](#) *Journal of Pattern Recognition Research*, 1, 74-110. doi:10.13176/11.764.
2. T. Neal, K. Sundararajan, A. Fatima, Y. Yan, Y. Xiang, and D. Woodard. 2017. [Surveying Stylometry Techniques and Applications.](#) *ACM Computing Surveys* 50, 6, Article 86 (November 2017), 36 pages.
3. T. Neal and D. Woodard, [You’re Not Acting Like Yourself: A Study on Soft Biometric Classification, Person Identification, and Mobile Device Use.](#) *IEEE Transactions on Biometrics, Behavior, and Identity Science.* vol. 1, no. 2, pp. 109-122, April 2019. doi: 10.1109/TBIOM.2019.2905868.

6.3 BOOK CHAPTERS

1. T. Neal, Woodard, D., and Striegel, A. [Mobile device usage data as behavioral biometrics](#) (Security, 2017), *Mobile Biometrics*, Chapter 7, pp. 177-207, DOI: 10.1049/PBSE003E ch7.
2. Neal T., Woodard D. (2020) [Presentation Attacks in Mobile and Continuous Behavioral Biometric Systems.](#) In: Bourlai T., Karampelas P., Patel V. (eds) *Securing Social Identity in Mobile Platforms.* Advanced Sciences and Technologies for Security Applications. Springer, Cham.

6.4 PH.D. THESIS

[A Feasibility Study of Mobile Device Usage Data for Biometric Identification and Soft Biometric Classification.](#) Ph.D. Dissertation. 2018. University of Florida, Gainesville, FL.

6.5 NON-REVIEWED ARTICLES

1. K. Zanna, S. King, T. Neal, and S. Canavan. [Studying the Impact of Mood on Identifying Smartphone Users.](#) arXiv:1906.11960.
2. Sk R. Jannat, D. Fabiano, S. Canavan, and T. Neal. [Subject Identification Across Large Expression Variations Using 3D Facial Landmarks.](#) arXiv:2005.08339.
3. T. Neal. [IrisGuard Provides Essential Aid to Refugees Using Non-Invasive Iris Recognition.](#) *IEEE Biometrics Council Newsletter* Vol 31, 2019.
4. T. Neal. [The Canadian Down Syndrome Society Partners with Google to Improve Voice Recognition.](#) *IEEE Biometrics Council Newsletter* Vol 32, 2019.

5. T. Neal. [The Role of Biometrics Amid Global Epidemics](#) . *IEEE Biometrics Council Newsletter* Vol 33, 2020.
6. T. Neal. [Remote Education and Biometrics: How Online Learning Tools are Using Biometrics to Enhance Classroom Instruction and an Opportunity for Improvement](#). *IEEE Biometrics Council Newsletter* Vol 34, 2020.
7. T. Neal. [Face Recognition Beyond Face Masks](#). *IEEE Biometrics Council Newsletter* Vol 35, 2020.
8. T. Neal. [Industry Responses to Face Masks: Periocular Recognition](#). *IEEE Biometrics Council Newsletter* Vol 36, 2020.
9. T. Neal. [Integrated Biometrics? Watson Mini Fingerprint Recognition Scanner to be Used for Identifying Victims of Natural Disasters](#). *IEEE Biometrics Council Newsletter* Vol 37, 2021.
10. T. Neal. [Bias in Commercial Biometric Applications](#). *IEEE Biometrics Council Newsletter* Vol 38, 2021.
11. T. Neal. [Biometrics in Commercial VR](#). *IEEE Biometrics Council Newsletter* Vol 39, 2021.

7 PRESENTATIONS

7.1 POSTERS

1. T. Neal, D. L. Woodard and A. D. Striegel. "Mobile device application, Bluetooth, and Wi-Fi usage data as behavioral biometric traits." BTAS 2015, Arlington, VA.
2. T. J. Neal and D.L. Woodard. "Mobile Biometrics: Using Association Analysis for Mining Smartphone Usage Data." Florida Institute for Cybersecurity Research Conference 2017, Gainesville, FL. *Best Poster Award.
3. T. J. Neal and D.L. Woodard. "Mobile Biometrics: Using Association Analysis for Mining Smartphone Usage Data." WISE Workshop at HOST 2017, McLean, VA.
4. T. Neal and D. L. Woodard. "Spoofing Analysis of Mobile Device Data as Behavioral Biometric Modalities." IJCB 2017, Denver, CO.
5. T. Neal and D. L. Woodard. "Using Associative Classification to Authenticate Mobile Device Users." IJCB 2017, Denver, CO.
6. T. Neal and D. L. Woodard. "On the Use of Mobile Calling Patterns for Soft Biometric Classification." BTAS 2018, Los Angeles, CA.
7. MD A. Noor, P. Gera, K. Zanna, G. Kaptan, and T. Neal. "Using Gait Recognition Techniques on Mobile App Sessions to Continuously Recognize Smartphone Users." 2019 Cyber Florida Research Symposium, Tampa, FL.
8. T. Neal and D. L. Woodard. "Mobile Biometrics, Replay Attacks, and Behavior Profiling: An Empirical Analysis of Impostor Detection." ICB 2019, Crete, Greece.
9. T. Neal, MD A. Noor, P. Gera, K. Zanna, and G. Kaptan. "Authenticating Phone Users Using a Gait-Based Histogram Approach on Mobile App Sessions." ICB 2019, Crete, Greece.

7.2 PANELIST

1. *Life of a Research Professor*, IEEE-HKN Student Leadership Conference, University of Florida, Gainesville, FL. April 2018.
2. *Black Computer Scientist: Past, Present and You*, University of South Florida, February 2019.
3. *Exploring Identities in Engineering*, University of South Florida, April 2019.
4. *CodeBreakHERS: Women in Cybersecurity*, University of South Florida, June 2019.
5. *FSU SSS-STEM Luncheon*, University of South Florida, November 2019.

7.3 INVITED COURSE LECTURES

1. *An Overview of Mobile Biometrics*, University of South Florida, November 2018.
2. *An Overview of Mobile Biometrics*, University of South Florida, February 2019.

7.4 INVITED TALKS

1. *Mobile Biometrics: A Continuous Look at Identity*, J.P. Morgan Chase TechFest, Tampa, FL, October 2019.
2. *Smartphones + X: Applications of Mobile Sensing*, Berea College, November 2019.

3. *Understanding Human Behavior with Personal Computing Devices – Mobile Mental Health Interventions: User Perceptions and Preliminary Results*, Duke University, April 2021.
4. *Towards Generalizable User Authentication Systems on Personal Devices*, Pacific Northwest National Laboratory (PNNL) Mathematics for Artificial Reasoning in Science Seminar, November 2021

8 SERVICE

8.1 UNIVERSITY AND DEPARTMENTAL SERVICE

1. USF CSE Dept. Broadening Participating in Computing (BPC) Committee (2018 – Current)
2. USF CSE Dept. Graduate Affairs Committee (2018 – Current)
3. USF CSE Advisors of Research Management Committee (2021 – Current)

8.2 PROFESSIONAL SERVICE

1. **IEEE WIE Society Liaison**, IEEE Biometrics Council (2019 – 2021)
2. **Associate Editor**, IEEE Biometrics Council Newsletter (2019 – Current)
3. **Guest Editor**, MDPI Electronics Special Issue on Recent Advances in Biometric Security in IoT Based on Machine Learning (2021 – Current)
4. *Conference / Workshop / Organizing Committees*
 - (a) **Local Arrangements Chair**, [International Conference on Biometrics: Theory, Applications, and Systems \(BTAS\)](#) 2019, Tampa, FL
 - (b) **Session Chair**, Novel, Mobile, and Soft Biometrics, [International Conference on Biometrics \(ICB\)](#) 2019, Crete, Greece
 - (c) **Program Committee**, The Bright and Dark Sides of Computer Vision: Challenges and Opportunities for Privacy and Security at CVPR ([CV-COPS 2019](#), [CV-COPS 2020](#))
 - (d) **Program Committee**, Workshop on Demographic Variation in the Performance of Biometric Systems (WACV 2020)
 - (e) **Organizer**, Special Session on [Identity for Social Good](#) at the International Joint Conference on Biometrics (IJCB) 2020, Houston, TX
 - (f) **Organizing Committee**, [Annual Nelms Workshops on Women in IoT: Leading Through Change](#). University of Florida Warren B. Nelms Institute for the Connected World, ([WIoT 2020](#), [WIoT 2021](#))
 - (g) **Co-Organizer**, Workshop on Applied Multimodal Affect Recognition ([AMAR 2020](#), [AMAR2021](#))
 - (h) **Technical Program Committee**, Responsible PR&MI ([First International Workshop on Responsible Pattern Recognition and Machine Intelligence](#)), ICCV 2021 (18th International Conference on Computer Vision)
5. *Reviewer*
 - (a) National Science Foundation (2018 – 2021)
 - (b) IEEE Transactions on Multi-Scale Computing Systems (2018)
 - (c) IEEE Transactions on Biometrics, Behavior, and Identity Science (2018 – 2021)
 - (d) IEEE International Conference on Identity, Security, and Behavior Analysis (ISBA 2018)
 - (e) IAPR International Conference on Biometrics (ICB 2019)
 - (f) ACM Computing Surveys (2019)
 - (g) IEEE International Conference on Biometrics: Theory, Applications, and Systems (BTAS 2019)
 - (h) International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2020)
 - (i) IEEE/IAPR International Joint Conference on Biometrics (IJCB 2021)

8.3 BROADENING PARTICIPATING IN COMPUTING / OTHER OUTREACH ACTIVITIES

1. Founder, CIBer/IAPR Machine Learning Club (<https://www.csee.usf.edu/~tjneal/ciber-iapr-mlc.html>) (2020 – Current)
2. Member, Diversity & Inclusion Committee on Systemic Change in ACM (2020 – Current)
3. Invited Guest Speaker, CodeBreakHERS (<https://www.codebreakhers.org/>) (2019, 2021)

9 PROFESSIONAL DEVELOPMENT

1. 2021 DARPA Young Faculty Awards Proposers Day Webinar (August 2021)
2. Qualitative Interview and Data Analysis Training (June 2019)
3. USF Research BootCamp, Office of Diversity, Inclusion and Equal Opportunity (May 2019)
4. SBIR/STTR Phase I Proposal Writing Seminar (March 2019)
5. NSF CAREER Workshop (November 2018/2019)
6. At-Risk for University and College Faculty and Staff Mental Health and Suicide Prevention Certification
7. CITI Program Certifications: Human Research - Social / Behavioral Investigators and Key Personnel; Responsible Conduct of Research for Engineers; Social and Behavioral Responsible Conduct of Research

10 HONORS AND AWARDS

1. 2021-2022 McKnight Junior Faculty Fellow
2. 2019 Apple Polishing Award, USF Ambassadors
3. 2018 UF Delores Auzenne Dissertation Award
4. 2017 – 2018 NSF CyberCorps Scholarship for Service Fellowship
5. 2012 – 2015 NSF Scholarship in Science, Technology, Engineering, and Mathematics
6. 2012 SCSU Computer Science Award
7. 2008 – 2012 SCSU Presidential Scholar

11 PROFESSIONAL MEMBERSHIPS

1. Association for Computing Machinery (ACM)
2. ACM Future of the Academy
3. Institute of Electrical and Electronic Engineers (IEEE)
4. IEEE Women in Engineering
5. IEEE Biometrics Council
6. Upsilon Pi Epsilon Computing and Information Disciplines
7. Kappa Mu Epsilon Mathematics Society

12 MISCELLANEOUS

1. Press Coverage (September 28, 2021). Bary, Emily. MarketWatch. [How the quirky ways you type, swipe and behave can protect you online](#)
2. Bushra Anjum. 2020. [A conversation with Tempestt Neal: continuous authentication methods for mobile platforms](#). Ubiquity 2020, June, Article 1 (June 2020), 5 pages. doi: 10.1145/3404394.
3. Press Coverage (May 20, 2020), [USF engineers awarded NSF grant to fight COVID-19 using big data](#). Tampa Bay NewsWire.
4. Press Coverage (October 20, 2011), [SC State University Senior Exclusive HBCU Recipient of Honor Scholarship](#) . South Carolina State University.

13 TEACHING

* indicates courses designed by Dr. Neal.

Access [syllabi](#).

S21	CIS 7910 Directed Research	No. of Students: 4	Average Rating: 5/5
S21	COP 3331 Object Oriented Software Design	No. of Students: 60	Average Rating: 4.4/5
S21	CIS 4900 Ind Study in Computer Science	No. of Students: 1	Average Rating: –
F20	CIS 4940 Industry Internship	No. of Students: 1	Average Rating: –

*F20	CAP 6101 Mobile Biometrics	No. of Students: 6	Average Rating: 5/5
*F20	CAP 4103 Mobile Biometrics	No. of Students: 23	Average Rating: 4.2/5
F20	CIS 7910 Directed Research	No. of Students: 4	Average Rating: 5/5
Su20	CIS 6900 Independent Study	No. of Students: 1	Average Rating: –
Su20	CIS 6971 Thesis: Master's	No. of Students: 1	Average Rating: –
Su20	CIS 4940 Industry Internship	No. of Students: 2	Average Rating: –
S20	CIS 7910 Directed Research	No. of Students: 4	Average Rating: 5/5
S20	COP 3331 Object Oriented Software Design	No. of Students: 47	Average Rating: 4.6/5
S20	COP 4900 Independent Study for IT	No. of Students: 1	Average Rating: –
S20	CIS 4915 Spvsd Research in Computer Sci	No. of Students: 1	Average Rating: –
S20	CIS 4900 Ind Study in Computer Science	No. of Students: 1	Average Rating: –
S20	CIS 4940 Industry Internship	No. of Students: 1	Average Rating: –
S20	CIS 6971 Thesis: Master's	No. of Students: 1	Average Rating: –
F19	CIS 4940 Industry Internship	No. of Students: 1	Average Rating: –
*F19	CIS 4930 Biometric Auth on Mobile Dev	No. of Students: 19	Average Rating: 4.9/5
*F19	CIS 6930 Biometric Auth on Mobile Dev	No. of Students: 12	Average Rating: 4.8/5
F19	CIS 7910 Directed Research	No. of Students: 3	Average Rating: 5/5
F19	CIS 6971 Thesis: Master's	No. of Students: 1	Average Rating: –
Su19	CIS 6971 Thesis: Master's	No. of Students: 1	Average Rating: –
Su19	CIS 4940 Industry Internship	No. of Students: 1	Average Rating: –
Su19	CIS 4915 Spvsd Research in Computer Sci	No. of Students: 1	Average Rating: –
S19	CIS 7910 Directed Research	No. of Students: 2	Average Rating: –
S19	COP 3331 Object Oriented Software Design	No. of Students: 47	Average Rating: 4.7/5
S19	CIS 6900 Independent Study	No. of Students: 1	Average Rating: –
S19	CIS 4915 Spvsd Research in Computer Sci	No. of Students: 1	Average Rating: –
S19	CIS 4940 Industry Internship	No. of Students: 1	Average Rating: –
*F18	CIS 6930 Biometric Auth on Mobile Dev	No. of Students: 3	Average Rating: 4.5/5
F18	CIS 6930 Seminar in AI	No. of Students: 2	Average Rating: –
*F18	CIS 4930 Biometric Auth on Mobile Dev	No. of Students: 18	Average Rating: 4.8/5
F18	CIS 6900 Independent Study	No. of Students: 3	Average Rating: 5/5
F12	Introduction to Information Technology Lab	Clemson University	