# Christian López, PhD

*E-mail*: lopezbec@lafayette.edu
*Personal Website*: sites.lafayette.edu/lopezbec
GitHub & Google Scholar

## ACADEMIC APPOINTMENT

*Lafayette College* — Easton, PA
**Assistant Professor**, Department of Computer Science — June 2019–Present
Affiliated faculty: Department of Mechanical Engineering

**Research areas:** Applied Machine Learning; Gamification; Virtual Reality
**Teaching load:** 5 courses/year
**Curriculum development:** Developed 2 new catalog courses † and 2 new course preparations§.
**Courses taught:** CS-104 Introduction to Game Programming; CS-200 Computer and Society; CS-424 Introduction to Machine Learning †; FYS-159 What's Inside ChatGPT? Demystifying AI and Large Language Models †; DS-201 Principles of Data Science §; ES-101 Introduction to Engineering: Design and Data Mining §.

## EDUCATION

*The Pennsylvania State University* — State College, PA
**Ph.D.** Industrial and Manufacturing Engineering, Human Factors & Ergonomics (advisor Conrad S. Tucker) — August 2015-May 2019

*Rochester Institute of Technology* — Rochester, NY
**M.S.** in Industrial and Systems Engineering, concentration in Applied Statistics — August 2011-December 2013

*Pontificia Universidad Católica Madre y Maestra* — Santo Domingo, D.R.
**B.S.** Industrial Engineering — August 2007-January 2011
Honors: ***Summa Cum Laude***

## PEER REVIEWED JOURNAL PAPERS **Students*

**At Lafayette College (2019-Present):**

**[J.0] Lopez, C.**, Krath, and J., Altmeyer, "Psychometric Evaluation of the Hexad-12 scale in Spanish," *Computer Human Behavior Reports* (**Under review**). [Contributions: lead author of the idea, led the writing of the paper, data collection, and data analysis] [Journal SJR: Q1, h-index: 30, Google Scholar h5-index: 55 ] Supported in part by [G.3]

**[J.1]** Guo C, Ashour O., **Lopez, C.**, and Tucker C., "Estimation of control intervals for reinforcement learning-based manufacturing-line control," *Journal of Computing and Information Science in Engineering,* 2026 (In Press), doi: 10.1115/1.4071110. [Contributions: assisted and guided in the idea process, helped with drafting the document and rebuttal ] [Journal SJR: Q1, h-index: 62, Google Scholar h5-index: 38] Supported in part by [G.2]

**[J.2] Lopez, C.,** Morrison, M.*, and Deacon, M.*, "Language models for generating programming questions with varying difficulty levels," *European Public & Social Innovation Review*, vol. 9, pp. 1–19, 2024, doi: 10.31637/epsir-2024-760**.** [Contributions: lead author of the idea, helped with the writing of the paper, data analysis, and application development] [Journal SJR: Q3, h-index: 6, Google Scholar h5-index: 11] (cited by: 1) Supported in part by [G.3]

**[J.3]** Wright, M. F., Azar, S. T., Whyte, E. M., and **Lopez, C. E.**, "Home safety hero: testing reaction time differences among teen mothers for single versus multiple game play," *Current Psychology*, vol. 42, pp. 19326-19337, 2023, doi: 10.1007/s12144-022-03748. [Contributions: helped with the design, development, and usability of the game, as well as assisted in the data analysis] [Journal SJR: Q1, h-index: 69, Google Scholar h5-index: 103] (cited by: 1)

**[J.4]** Silverman, C.*, Stewart, L.*, and **Lopez, C. E.**, "Reinforcement learning to generate 3D shapes: Towards a spatial visualization VR application," *Journal of Computer Science in Colleges,* vol. 38, no. 3, pp. 61-75, 2022, doi: 10.5555/3580523.3580530. [Contribution: lead author of the idea, helped with the writing of the paper, data analysis, and code for experiments] [Google Scholar h5-index: 11] (Best Paper Award)

**[J.5]** Stranick, T.*, and **Lopez, C. E.**, "Adaptive virtual reality exergame: Promoting physical activity among workers," *Journal of Computing and Information Science in Engineering*, vol. 22, no. 3, pp. 031002, 2021, doi: 10.1115/1.4053002. [Contributions: lead author of the idea, helped with the writing of the paper, data analysis, and application development] [Journal SJR: Q1, h-index: 62, Google Scholar h5-index: 38] (cited by: 10)

**[J.6] Lopez, C. E.**, and Gallemore, C., "An augmented multilingual Twitter dataset for studying the COVID-19 infodemic," *Social Network Analysis Mining*, vol. 11, no. 102, 2021, doi: s13278-021-00825-0. [Contributions: lead author of the idea, managed data collection, analysis, and writing] [Journal SJR: Q1, h-index: 54, Google Scholar h5-index: 47] (cited by: 73, pre-print cited by: 177)

**[J.7]** Wright, M. F., Azar, S. T., Whyte, E. M., **Lopez, C. E.**, and Hanna, J., "Preventing childhood injuries: Improving home hazard identification and resolution through serious game simulation," *Translational Issues in Psychological Science,* vol.7, no. 3, pp. 284-296, 2021, doi: 10.1037/tps0000299. [Contributions: helped with design, development, and usability of the game, as well as assisted in the data analysis] [Journal SJR: Q2, h-index: 16, Google Scholar h5-index: 28] (cited by: 7)

**[J.8] Lopez, C. E.**, Cunningham, J., Ashour, O., and Tucker, C. S, "Deep reinforcement learning for procedural content generation of 3D virtual environments," *Journal of Computing and Information Science in Engineering,* vol. 20, no. 5, pp.051005, 2020, doi: 10.1115/1.4046293. [Contribution: coordinated and led the experiments, data collection, data analysis, and writing of the document] [Journal SJR: Q1, h-index: 62, Google Scholar h5-index: 38] (cited by: 38)

**Prior to Lafayette College:**

**[J.9] Lopez, C. E.,** and Tucker, C. S., "Towards personalized adaptive gamification: A machine learning model for predicting performance," *IEEE Transactions on Games*, vol. 12, no. 2, pp. 155-168, 2020, doi: 10.1109/TG.2018.2883661. [Journal SJR: Q2, h-index: 56, Google Scholar h5-index: 33] (cited by: 99)

**[J.10] Lopez, C. E.,** and Tucker, C. S., "The effects of player type on performance: A gamification case study," *Computers in Human Behavior,* vol. 91, pp. 333-345, 2019, doi: 10.1016/j.chb.2018.10.005. [Journal SJR: Q1, h-index: 275, Google Scholar h5-index: 160] (cited by: 262)

**[J.11]** Zhao, V., **Lopez, C. E.,** and Tucker, C. S, "Evaluating the impact of idea dissemination methods on information loss," *ASME Journal of Computing and Information Science in Engineering,* vol. 19, no.3, pp. 031006, 2019, doi: 10.1115/1.4042553. [Journal SJR: Q1, h-index: 62, Google Scholar h5-index: 38] (cited by: 5)

**[J.12] Lopez, C. E.,** Miller, S. R., and Tucker, C. S, "Exploring biases between human and machine generated designs," *ASME Journal of Mechanical Design,* vol. 141, no. 2, pp. 021104, 2019, doi: 10.1115/1.4041857. [Journal SJR: Q1, h-index: 146, Google Scholar h5-index: 49] (cited by: 43)

**[J.13] Lopez, C. E.,** Tucker, S., Salameh, T., and Tucker, C., "An unsupervised machine learning method for discovering patient clusters based on genetic signature," *Journal of Biomedical Informatics,* vol. 85, pp. 30-39, 2018, doi: 10.1016/j.jbi.2018.07.004. [Journal SJR: Q1, h-index: 137, Google Scholar h5-index: 73] (cited by: 171)

**[J.14] Lopez, C. E.,** and Tucker, C. S., "A quantitative method for evaluating the complexity of implementing and performing game features in physically-interactive gamified applications," *Computers in Human Behavior,* vol. 71, pp. 42-58, 2017, doi: 10.1016/j.chb.2017.01.036. [Journal SJR: Q1, h-index: 275, Google Scholar h5-index: 160] (cited by: 41)

---

## PEER REVIEWED CONFERENCE PAPERS
***Students**

**At Lafayette College (2019-Present):**

**[C.0]** Guo C, Ashour O., **Lopez, C**., and Tucker C., "Transformer-based reward redistribution for production line control," in in *Proceedings of the ASME 2026 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference,* (Under Review). [Contributions: assisted and guided in the idea process, helped with drafting the document] [h-index: 9] Supported in part by [G.2]

**[C.1]** DiFrancesca, D., Ashour, O., Caldwell, A., Aidan, M.*, **Lopez, C. E**., and Tucker, C., "The impact of an educational game on manufacturing knowledge and metacognitive problem-solving skill development," in *Proceedings of the 2026 ASEE Annual Conference & Exposition* (Accepted for publication). [Contribution: helped with game development, data analysis, and writing of the document] [h5-index: 12] Supported in part by [G.2]

**[C.2]** DiFrancesca, D., **Lopez, C. E**., and Ashour, O., "Exploring the impact of inclusive digital elements in the design of 3D simulation-based educational games," in *Proceedings of 2025 ASEE Annual Conference & Exposition,* Montreal, QC, Canada, June 2025, doi: 10.18260/1-2—56536. [Contribution: helped with experiment, data collection, and writing of the document, performed the data analysis] [h5-index: 12] Supported in part by [G.2]

**[C.3]** McShane**,** L.*, and **Lopez, C. E**., "Perceived complexity of 3D shapes for spatial visualization tasks: Humans vs generative models," in *Proceedings of the ASME 2023 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2023),* vol. 2, 43rd Computer and Information Engineering Conference (CIE), Boston, MA, USA, August 20-23, 2023, doi: 10.1115/DETC2023-115081. [Contribution: lead author of the idea, helped with the writing of the paper, data analysis, and data collection] [h-index: 9] (cited by: 4)

**[C.4]** Busheska, A.*, and **Lopez, C. E**., "Exploring the perceived complexity of 3D shapes: Towards a spatial visualization VR application," in *Proceedings of the ASME 2022 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2022),* vol. 2, 42nd Computer and Information in Engineering Conference (CIE), St. Louis, MO, USA, August 14-17, 2022, doi: 10.1115/DETC2022-91212. [Contribution: lead author of the idea, helped with the writing of the paper, data analysis, and experiments] [h-index: 9] (cited by: 2)

**[C.5]** Ashour, O., Seamon, A., **Lopez, C. E**, Ozden, G., S., DiFrancesca, D., and Tucker, C., "A study on the effectiveness of using integrated nonlinear storytelling and simulation-based learning game in an operations research course," in *Proceedings of 2022 ASEE Annual Conference & Exposition,* Minneapolis, MN, USA, July 26-29, 2022, doi: 10.18260/1-2-41016. (New IE Educator Outstanding Paper Award) [Contribution: performed the data analysis, helped with experiment, data collection, and writing of the document] [h5-index: 12] Supported in part by [G.2] (cited by: 4)

**[C.6]** Stranick, T.*, and **Lopez, C. E**., "Virtual reality exergames: Promoting physical health among industry workers," in *Proceedings of the ASME 2021 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2021),* vol. 2, 41st Computer and Information in Engineering Conference (CIE), Virtual Online, August 17-19, 2021, doi: 10.1115/DETC2021-67608. [Contribution: lead author of the idea, helped with the writing of the paper, data analysis, and experiments] [h-index: 9] (cited by: 3)

**[C.7]** Mujuru, T.*, and **Lopez, C. E.**, "Creating virtual reality teaching modules for low-cost headsets," in *Proceedings of the ASME 2021 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2021),* vol. 2, 41st Computer and Information in Engineering Conference (CIE), Virtual Online, August 17-19, 2021, doi: 10.1115/DETC2021-72084. [Contribution: lead author of the idea, helped with the writing of the paper, data analysis, and experiments] [h-index: 9] Supported in part by [G.5] (cited by: 8)

**[C.8] Lopez, C. E.**, Ashour, O., Cunningham, J. D., & Tucker, C., "A study on the effectiveness of the CLICK approach in an operations research course," in *Proceedings of 2021 ASEE Annual Conference & Exposition*, Virtual Conference, July 26-29, 2021, doi: 10.18260/1-2--366161. (New IE Educator Outstanding Paper Award) [Contribution: coordinated experiment, performed data collection, data analysis, and writing of the document] [h5-index: 12] (cited by: 7)

**[C.9] C. E. Lopez** and C. S. Tucker, "Adaptive gamification and its impact on performance," in *HCI in Games: Experience Design and Game Mechanics*, 3rd International Conference, HCI-Games 2021, held as part of the 23rd HCI International Conference (HCII 2021), Virtual Event, July 24–29, 2021, Proc., Part I. Berlin, Germany: Springer, 2021, pp. 327–341, doi: 10.1007/978-3-030-77277-2_25. [Contribution: lead author of the idea, led the writing of the paper and data analysis] [h5-Index: 45] (cited by: 24)

**[C.10]** Naphade, M., Wang, S., Anastasiu, D.C., Tang, Z., Chang, M.C., Yang, X., Yao, Y., Zheng, L., Chakraborty, P., **Lopez, C.E**. and Sharma, A., "The 5th AI city challenge," in *Proceedings of the 2021 IEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW),* Virtual Conference, Nashville, TN, USA, June 19-25, 2021, pp. 4258-4268, doi: 10.1109/CVPRW53098.2021.00482. [Contribution: helped with the writing of the document, and the collection of data for one out of the five datasets/tracks of the AI City Challenge] [h5-index: 117] (cited by: 95)

**[C.11] Lopez, C. E.**, Cunningham, J., Ashour, O., Lynch, P., and Tucker, C., "The CLICK approach and its impact on learning introductory probability concepts in an industrial engineering course," in *Proceedings of 2020 ASEE Annual Conference & Exposition*, Virtual Conference, July 22-26, 2020, doi: 10.18260/1-2—35297. [Contribution: lead author of the idea, led the writing of the paper and data analysis] [h5-index: 12] (cited by: 7)

**[C.12]** Cunningham, J., **Lopez, C. E.**, Ashour, O., Lynch, P., and Tucker, C., "Multi-context generation in virtual reality environments using deep reinforcement learning," in *Proceedings of the ASME 2020 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2020)*, vol. 9, 40th Computers and Information in Engineering Conference (CIE), Virtual Conference, August 17-19, 2020, doi: 10.1115/DETC2020-22624. [Contribution: helped with the experiments, data collections, data analysis, and writing of the document] [h-index: 9] (cited by: 10)

**Prior to Lafayette College:**

**[C.13] Lopez, C. E.,** Zhao, V., Tucker, C., "Semantic network differences across engineering design communication methods," in *Proceedings of the ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2019)*, vol. 1, 39th Computers and Information in Engineering Conference, Anaheim, CA, USA, August 18–21, 2019, doi: 10.1115/DETC2019-97728. (cited by: 2)

**[C.14] Lopez, C. E.,** Ashour, O., Tucker, C., "Reinforcement learning content generation for virtual reality applications," in *Proceedings of the ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2019)*, vol. 1, 39th Computers and Information in Engineering Conference, Anaheim, CA, USA, August 18–21, 2019, doi: 10.1115/DETC2019-97711. (ASME CIE Virtual Environments and Systems Best Paper Award) (cited by: 23)

**[C.15] Lopez, C. E.,** Ashour, O., and Tucker, C., "An introduction to the CLICK approach: Leveraging virtual reality to integrate the industrial engineering curriculum," in *Proceedings of 2019 ASEE Annual Conference & Exposition*, Tampa, FL, June 16-19, 2019, doi: 10.18260/1-2--31904. (cited by: 11) (New Educator Outstanding Paper Award)

**[C.16] Lopez, C. E.,** and Tucker, C., "Implementing gamification in engineering bridge programs: A case study exploring the use of the Kahoot! application," in *Proceedings of 2019 ASEE Zone 1 Conference & Workshop*, Niagara Falls, NY, April 11-15, 2019, doi: 10.18260/1-2-1153-33757. (cited by: 10)

**[C.17] Lopez, C. E.,** Miller, S. R., and Tucker, C. S., "Human validation of computer vs. human generated design sketches," in *Proceedings of the ASME 2018 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2018)*, vol. 7, 30th International Conference on Design Theory and Methodology, Quebec City, QC, Canada, August 26–29, 2018, doi: 10.1115/DETC2018-85698. (cited by: 16)

**[C.18] Lopez, C. E.,** and Tucker, C. S., "Towards personalized performance feedback: Mining the dynamics of facial keypoint data in engineering lab environments," in *Proceedings of 2019 ASEE Mid-Atlantic Section Spring Conference,* Washington, D.C., April 6-7, 2018, doi: 10.18260/1-2--29500. (cited by: 8) (Best Paper Award)

**[C.19] Lopez, C. E.,** and Tucker, C. S., "Towards real-time ergonomics feedback and educational content with the use of co-robots," in *Proceedings of* 2017 Mid-Atlantic Section Fall Conference, Berks, PA, October 6-7, 2017, doi: 10.18260/1-2--29392. (cited by: 2)

**[C.20] Lopez, C. E.,** and Tucker, C. S., "From mining affective state to mining facial keypoint data: The quest towards personalized feedback," in *Proceedings of the ASME 2017 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2017)*, vol. 1, 37th Computers and Information in Engineering Conference, Cleveland, OH, USA, August 6–9, 2017, doi: 10.1115/DETC2017-67340. (cited by: 9)

**[C.21] Lopez, C. E.,** Zheng, X., and Miller, S. R., "Linking creativity measurements to product market favorability: A data-mining approach," in *Proceedings of the ASME 2017 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2017)*, vol. 2A, 43rd Design Automation Conference, Cleveland, OH, USA, August 6–9, 2017, doi: 10.1115/DETC2017-67622. (cited by: 5)

**[C.22] Lopez, C. E.,** and Nembhard, D. A., "Cooperative workforce planning heuristic with workers learning/forgetting and demand constraints," in *Proceedings of the 2017 Industrial and Systems Engineering Conference,* vol. 1, pp. 380-404, Pittsburgh, PA, May 20-23, 2017. ISBN: 978-1-5108-4802-3. (cited by: 8)

---

## PEER REVIEWED WORKSHOP PAPERS **Students*

**At Lafayette College (2019-Present):**

**[W.1]** Vasu, M.*, Abreu, N., Vásquez, R., and **Lopez, C. E.,** "Vehicle-counting with automatic region-of-interest and driving-trajectory detection," in *Proceedings 2021 International Conference on Machine Learning Conference (ICML): LatinX in AI Research Workshop,* Virtual Conference, July 8-24, 2021, doi: 10.52591/lxai2021072419. [Contribution: lead author of the idea, helped with the writing of the paper, data analysis, and experiments] Supported in part by [G.4] (cited by: 5)

---

## PEER REVIEWED POSTER PAPERS **Students*

**At Lafayette College (2019-Present):**

**[P.1]** Dinh, N.*, and **Lopez, C. E.**, "Exploring gamification elements in educational applications for Python programming" at *Proceedings of the Consortium for Computing Sciences in Colleges Regional Conference*, Washington D.C., October 20, 2023. [Contribution: lead author of the idea, guided the data collection process and analysis] Supported in part by [G.3]

**[P.2]** Ashour, O., Cunningham, J. D., **Lopez, C. E.**, and Tucker, C., "Connected learning and integrated course knowledge (CLICK) approach," in *Proceedings of 2021 ASEE Annual Conference & Exposition*, Virtual Conference, July 26-29, 2021, doi: 10.18260/1-2--36836.[Contribution**:** coordinated experiment, performed data collections, data analysis, and writing of the document] (cited by: 1)

**[P.3]** Stewart, L.*, and **Lopez, C. E.,** "Developing spatial visualization skills with virtual reality and hand tracking," in *Stephanidis, C., Antona, M., Ntoa, S. (eds) HCI International 2021 - Late Breaking Posters. held as part of the 23rd HCI International Conference (HCII 2021)*, Virtual Event, July 24–29, 2021, Communications in Computer and Information Science, vol 1498, pp. 390-398, doi: 10.1007/978-3-030-90176-9_51. [Contribution: lead author of the idea, helped with the writing of the paper] (cited by: 4)

**[P.4]** Stranick, T.*, and **Lopez, C. E.**, "Leveraging virtual reality and exergames to promote physical activity," in *Stephanidis, C., Antona, M., Ntoa, S. (eds) HCI International 2021 - Late Breaking Posters. held as part of the 23rd HCI International Conference (HCII 2021)*, Virtual Event, July 24–29, 2021, Communications in Computer and Information Science, vol 1421, pp. 392-399, doi: 10.1007/978-3-030-78645-8_50. [Contribution: lead author of the idea, helped with the writing of the paper] (cited by: 3)

**Prior to Lafayette College:**

**Lopez, C. E.,** and Tucker, C. S., "When to provide feedback? Exploring human-co-robot interactions in engineering environments," *in Proceedings of 2017 ASEE Annual Conference & Exposition,* Columbus, OH, June 23-28, 2017, doi: 10.18260/1-2—27955. (cited by: 5)

## PREPRINT & BOOK CHAPTERS

**At Lafayette College (2019-Present):**

**Lopez, C. E.,** Vasu, M., Gallemore, C., "Understanding the perception of COVID-19 policies by mining a multilanguage Twitter dataset" in *arXiv preprint arXiv:2003.10359,* 2020, doi: 10.48550/arXiv.2003.10359. (cited by: 177) *pre-print of **[J.5]**

**Prior to Lafayette College:**

**Lopez, C. E.,** and Tucker, C. S., "Mining facial keypoint data: The quest towards personalized engineering applications," in *Fukuda, S. (eds) Emotional Engineering,* vol. 7, Springer, Cham 2019, doi: 10.1007/978-3-030-02209-9_7. (cited by: 8)

## GRANTS

**[G.1]** Co-PI, "*Development of a large multimodal language model for the Dominican dialect,*" National Fund for Scientific and Technological Innovation and Development, Ministry of Higher Education, Science and Technology (Dominican Republic), Grant 2024-2-3A1-1057, 2025-2027. Collaborative grant with Pontificia Universidad Católica Madre y Maestra (PUCMM). Total Award: RD$5,806,349 (~US$105,000)

**[G.2]** Co-PI, "*Adaptable game-based, interactive learning environment for STEM education (AGILE STEM),*" National Science Foundation, Grant 2302815, 2023-2026. Collaborative grant with Penn State and Carnegie Mellon University. Lafayette Sub-Award: US$149,992

**[G.3]** PI, "*Artificial intelligence and gamification for personalized-adaptive programming educational applications,*" National Fund for Scientific and Technological Innovation and Development, Ministry of Higher Education, Science and Technology ( Dominican Republic), Grant 2022-3A1-112, 2023-2025. Collaborative grant with Universidad Nacional Pedro Henríquez Ureña (UNPHU). Total Award: RD$6,092,346 (~US$118,000)

**[G.4]** PI, "*Machine learning method for real-time accident detection*," National Fund for Scientific and Technological Innovation and Development, Ministry of Higher Education, Science and Technology (Dominican Republic), Grant 2018-19-3A1-107, 2019-2022. Collaborative grant with Universidad Autónoma de Santo Domingo (UASD). Total Award: RD$7,777,100 (~US$150,000)

**[G.5]** PI, "*Virtual reality for teaching engineering designs and programming*," Teaching with Technology, Lafayette College, 2019. Award: US$5,000.

## HONORS & AWARDS

**At Lafayette College (2019-Present):**

**Best Paper Award,** Consortium for Computing Sciences in Colleges Regional Conference, 2022.

**New Educator Outstanding Paper Award,** ASEE Annual Conference & Exposition, Virtual Conference, 2022.

**Inducted into the Dominican Republic National Research Career**, Ministry of Higher Education, Science and Technology, 2019.

**Prior to Lafayette College:**

**Best Paper Award**, ASME 2019 Computer & Information in Engineering (CIE) Conference, Virtual Environments & Systems, 2019.

**Outstanding Paper Award**, ASEE Annual Conference & Exposition 2019.

**First place** at the Penn State College of Engineering Research Symposium 2019.

**Outstanding Graduate Student Awards**, College of Engineering Multicultural Engineering Program, Penn State University, Spring 2019.

**Best Paper Award**, ASEE Mid-Atlantic Conference, 2018.

## INVITED TALKS WHILE AT LAFAYETTE COLLEGE

**[T.1]** Lopez, C. E., "Revolutionizing immersive experiences: The synergy of AI, virtual reality, and gamification in learning and user engagement," at *Artificial Intelligence, Modeling, and Simulation Laboratory Seminar Series,* Penn State Berks, PA, USA. September 19, 2024.

**[T.2]** Dahl, J., Serrano, S., and Lopez, C. E., "Panel: Everything you wanted to know about machine learning and natural language processing but were afraid to ask," at *Symposium on AI Literacy Across the Curriculum*, Lafayette College, PA, USA. August 20, 2024.

**[T.**3] Lopez, C. E., "Workshop: Introduction to neural networks fundamentals and applications," at *the XIX International Scientific Research Congress*, Santo Domingo, Dominican Republic, June 12-14, 2024.

**[T.4]** Lopez, C. E., "Workshop: Introduction to machine learning," at *Universidad Nacional Pedro Henríquez Ureña,* Santo Domingo, Dominican Republic, June 9, 2023.

**[T.5]** Lopez, C. E., "Workshop: Introduction to Python programming," at *Universidad Nacional Pedro Henríquez Ureña,* Santo Domingo, Dominican Republic, June 8, 2023.

**[T.6]** Lopez, C. E., "Panel: Programming education: Challenges and opportunities," at *Universidad Nacional Pedro Henríquez Ureña,* Santo Domingo, Dominican Republic, June 7, 2023.

**[T.7]** Lopez, C. E., "Orange-Data mining visual language software workshop," at *Lafayette Digital Humanities Summer Scholar program,* Virtual, June 6, 2022.

**[T.8]** Lopez, C. E. and Busheska, A., "Introducing students to spatial visualization through mathematical models to calculate the complexity of 3D shapes within a virtual reality application," *at Lafayette Digital Humanities Summer Scholar program,* Virtual, June 8, 2022.

**[T.9]** Lopez, C. E., "Low fidelity virtual reality teaching modules: A case study in online learning environments," at *the Scholarship of Teaching & Learning Forum of LVAIC,* Virtual, March 30, 2022.

**[T.10]** Lopez, C. E., "Developing students' spatial visualization skills using Virtual Reality," at *the Scholarship of Teaching & Learning Forum of LVAIC,* Virtual, March 30, 2022.

**[T.11]** Lopez, C. E., "Workshop of artificial intelligence and its uses to fight COVID-19," at *the Universidad Autónoma de Santo Domingo (UASD)*, Virtual, November 19, 2020.

**[T.12]** Ashour, O., Lopez, C. E., and Negahban, A, "Panel: extended reality and simulation in STEM education," at *2020 Institute of Industrial and Systems Engineers Annual Conference*, Virtual, November 3, 2020.

**[T.13]** Lopez, C. E., "Machine learning research and application areas," *at* the *Dominican Republic Artificial Intelligence Summit*, Virtual, October 29, 2020.

**[T.14]** Lopez, C. E., "New technologies and their application in the knowledge and management of biological diversity," at *Symposium of Research and Scientific Solutions in Times of COVID-19 Crisis and Beyond*, Virtual, June 23, 2020.

**[T.15]** Lopez, C. E., "Machine learning algorithms in practice," at *the Ministry of Higher Education, Science and Technology of the Dominican Republic*, Virtual, May 22, 2020.

**[T.16]** Lopez, C. E., "Workshop on artificial intelligence and machine learning algorithms," at *the Universidad Autónoma de Santo Domingo (UASD)*, Santo Domingo, D.R., June 12, 2019.

**[T.17]** Lopez, C. E., "Keynote: Artificial intelligence and machine learning: The 4th industrial revolution and its impact on the economy and the labor market," at *the XV International Scientific Research Congress*, Santo Domingo, D.R., June 5-7, 2019.

**[T.18]** Lopez, C. E., "The challenges for teaching machine learning and AI in this interconnect world," at *the Universidad Autónoma de Santo Domingo (UASD),* Santo Domingo, D.R., March 11, 2019.

**[T.19]** Lopez, C. E., "The importance of research and innovation in the age of AI," at *the Universidad Autónoma de Santo Domingo (UASD),* Santo Domingo, D.R., March 10, 2019.

---

## STUDENT ADVISING & MENTORING RESERCH WORK

(Mentored Undergraduate Research Work)

**[S.1]** Miles Morrison, "Leveraging language models to generate programming questions of varying difficulty," at *National Conference on Undergraduate Research*, Pittsburgh, PA, USA, April 7-9, 2025.

**[S.2]** Wilson Hong and Aidan Mathieu, "Creating adaptable, game-based learning environments for STEM education," at *National Conference on Undergraduate* Research, Pittsburgh, PA, USA, April 7-9, 2025.

**[S.3]** Alex Villalba Gonzalez, "Virtual reality for enhancing spatial visualization skills," *National Conference on Undergraduate Research*, Pittsburgh, PA, USA, April 7-9, 2025.

**[S.4]** Matthew Deacon, "Integrating large language models into educational gamification programming application," at *National Conference on Undergraduate Research*, Pittsburgh, PA, USA, April 7-9, 2025.

**[S.5]** Wilson Hong and Aidan Mathieu, "Creating Adaptable, game-based learning environments for STEM education", *Fall 2024 Student Poster Session*, Lafayette College, Easton, PA, November 1, 2024.

**[S.6]** Miles Morrison and Matthew Deacon, "Integrating large language model into educational programming applications," at *Fall 2024 Student Poster Session*, Lafayette College, Easton, PA, November 1, 2024.

**[S.7]** Liam Stewart, "Spatial visualization VR application: Using reinforcement learning for generating 3D shapes", at *the Lehigh Valley University David and Lorraine Freed Undergraduate Research Symposium*, Bethlehem, PA, April 6, 2022.

**[S.8]** Angela Busheska, "Calculating perceived complexity to improve spatial visualization skills," at *the National Conference of Undergraduate Research*, Virtual, April 4-8, 2022.

**[S.9]** Liam Stewart, "Spatial visualization VR application: Using reinforcement learning for generating 3D shapes," at *the National Conference of Undergraduate Research*, Virtual, April 4-8, 2022.

**[S.10]** Malolan Vasu, "Automatic vehicle counting for traffic management systems," at *Fall 2021 Student Poster Session,* Lafayette College*,* Easton, PA, October 19, 2021.

**[S.11]** Manaka Gomi, "Accident simulator for traffic accident detection," at *Fall 2021 Student Poster Session,* Lafayette College*,* Easton, PA, October 19, 2021.

**[S.12]** Angela Busheska, "Mathematical models to calculate the perceived complexity of 3D Shapes," at *Fall 2021 Student Poster Session,* Lafayette College*,* Easton, PA, October 19, 2021.

**[S.13]** Liam Stewart, "Spatial visualization VR application: Using reinforcement learning for generating 3D shapes," at *Fall 2021 Student Poster Session,* Lafayette College, Easton, PA, October 19, 2021.

**[S.14]** Takudzwa Mujuru, "Virtual reality in education," at *Fall 2020 Student Poster Session,* Lafayette College*,* Easton, PA, September 18, 2020.

**[S.15]** Daniel Carroll, "Using virtual reality to improve spatial visualization skills," at *Fall 2020 Student Poster Session,* Lafayette College, Easton, PA, September 18, 2020.

**[S.16]** Thomas Stranick, "Utilizing virtual reality and gamification to promote physical activity," at *Fall 2020 Student Poster Session,* Lafayette College, Easton, PA, September 18, 2020.

**[S.17]** Malolan Vasu, "Vehicle tracking using machine learning for smart cities," at *Fall 2020 Student Poster Session,* Lafayette College*,* Easton, PA, September 18, 2020.

**[S.18]** Ivan Pogorelov, "Robotic arm control using reinforcement learning," at *Fall 2020 Student Poster Session,* Lafayette College, Easton, PA, September 18, 2020.

**[S.19]** Malolan Vasu, "Understanding the perception of COVID-19 policies by mining a multilanguage Twitter dataset" in *arXiv preprint arXiv:2003.10359*, 2020.

**[S.20]** Jelissa Kayo, "Social media mining for understanding users' sentiment and informing stakeholders," at *Lehigh Valley University David and Lorraine Freed Undergraduate Research Symposium*, Bethlehem, PA, April 17, 2020.

**[S.21]** Jelissa Kayo, "Using data mining and social media to inform stakeholders," at *LVAIC Global Student Conference Advances Inclusion and Cultural Awareness*, Easton, PA, February 27, 2020.

## PROFESSIONAL SERVICE

### Conference leadership & program committees

- Co-Chair, Birds of a Feather Program Committee, ACM Richard Tapia Celebration of Diversity in Computing Conference, 2023.
- Chair, Academic Panels & Workshops Program Committee, ACM Richard Tapia Celebration of Diversity in Computing Conference, 2021–2022.
- Virtual Environments and Systems Co-Chair, ASME Computers and Information in Engineering (CIE) Conference, 2021–2022.
- Poster Session Judge, ACM Richard Tapia Celebration of Diversity in Computing Conference, 2022.
- Co-Chair, Academic Panels & Workshops Program Committee, ACM Richard Tapia Celebration of Diversity in Computing Conference, 2020.
- Committee Secretary, Virtual Environments and Systems Committee, ASME Computers and Information in Engineering (CIE) Conference, 2019–2020.
- Reviewer and Session Chair, NeurIPS LatinXAI Research, 2020.

**Journal and conference peer review**

- Reviewer, ACM CHI Conference on Human Factors in Computing Systems (CHI), 2025.
- Reviewer, Journal of Empirical Software Engineering, 2022.
- Reviewer, ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE), 2019–2022.
- Reviewer, ASME Journal of Mechanical Design, 2019–2022.
- Reviewer, Springer Nature, 2021.
- Reviewer, Tools and Methods of Competitive Engineering Symposium, 2020.
- Reviewer, IEEE Computer Society MultiMedia, 2019.
- Reviewer, Elsevier Computers & Education, 2019.
- Reviewer, Elsevier Journal of Biomedical Informatics, 2019.
- Reviewer, Design Science (Cambridge), 2019.

**Mentoring and external evaluation**

- Mentor, MentorNet program: mentored three students from underrepresented groups interested in Computer Science and Engineering, 2019–2022.
- Honors thesis panel member, William Brandes (advisor: Prof. Jeffrey Bush, Moravian College), Spring 2021.

## PRIOR ACADEMIC EXPERIENCE

*Department of Industrial and Manufacturing Engineering, Penn State* — State College, PA

**Graduate Research Assistant,** Projects: — May 2016-May 2019

- Leveraging Virtual Reality to Connect Learning and Integrate Course Knowledge in Industrial Engineering Curriculum (NSF-DUE Grant#1834465).
- Observation, Inference, and Intervention: An Adaptive Co-robot System that Provides Individually Customized Performance Feedback Based on Students' Affective States (NSF-NRI Grant #1527148).
- Injuries Aren't Part of the Game: Developing an injury prevention game to engage parents.
- Gamification and Self-Monitoring of patients for enhanced Wellness Outcomes.
- Integration of Genomic Data for Precision Health Decision Support.
- Design of a Project Management course for Engineers with a flipped classroom format.

**Teaching Assistant:** — January 2016-April 2016

- IE-312, Production Design and Manufacturing Processes

*Center for Engineering Outreach and Inclusion, Penn State* — State College, PA

**Jump Start Program Instructor:** — May 2018-June 2018

- PHYS-211, General Physics Mechanics.

*Department of Computer Sciences and Engineering, Penn State* — State College, PA

**Teaching Assistant:** — August 2015-January 2016

- CMPSC-203, Introduction to Databases and Spreadsheets.

*Morgan Academic Support Center for Student-Athletes, Penn State* — State College, PA

**Study Hall Monitor and Tutor** — August 2015-July 2016

*Department of Industrial and Systems Engineering, RIT* Rochester, NY
**Graduate Assistant,** Toyota Production Systems Laboratory. May 2013-December 2013

**Graduate Teaching Assistant:** August 2013-December 2013

- ISEE-561/661 (Undergrad/Grad), Linear Regression Analysis.
- ISEE-560, Applied Statistical Quality Control.
- ISEE-421, Design and Analysis of Production Systems.

**Graduate Research Assistant**, Project: January 2013-August 2013

- The State of the Material Handling Education, sponsored by the College Industry Council on Material Handling Education (CICMHE).

*Information & Technology Services Department, RIT* Rochester, NY
**Industrial and Systems Engineer Lab Assistant** August 2012-January 2014

## CONFERENCE PRESENTATIONS & POSTERS PRIOR TO LAFAYETTE COLLEGE

Lopez, C. E., "Exploring biases between human and machine generated designs," at *the ASME Int. Mechanical Eng. Congress & Exposition, NSF Poster Competition,* Pittsburgh, PA, November 9-15, 2018.

Lopez, C. E., "Deep learning generative model in the product development process: Exploring designers' bias," at *the SHPE National Conference, Engineering Science Symposium,* Cleveland, OH, November 7-11, 2018.

Lopez, C. E., "Towards personalized gamification to promote physical activity," at *the ACM Richard Tapia Celebration of Diversity in Computing Conference,* Orlando, FL, September 19-22, 2018.

Lopez, C. E., "Integrating co-robots and machine learning in engineering lab environments to provide personalized feedback," at *2018 ASME Computer and Informatics Engineering Conference, Graduate Research Poster session*, Quebec City, Canada, August 26-29, 2018.

Lopez, C. E., "Real-time occlusion between real and digital objects in augmented reality," at *ASME Int. Design Engineering Technical Conference & Computer and Informatics Engineering Conference*, Quebec City, Canada, August 26-29, 2018.

Lopez, C. E., "Towards personalized gamification to promote physical activity," at *the Penn State Hershey Children's Hospital Pediatric Research Day,* Hershey, PA, May 24, 2018.

Lopez, C. E., "An unsupervised machine learning method for discovering patient clusters based on genetic signatures," at *the Center for Health Organization Transformation,* Houston, TX, April 12-13, 2018.

Lopez, C. E., "Supervised machine learning: The caret package tutorial" and "Unsupervised machine learning: The hclust, pvclust, cluster, mclust, and more," at *We R: Penn State R User's Group from QuantDev,* State College, PA, November 8 and 15, 2017.

Lopez, C. E., "Real-time observation, inference and intervention of co-robot system towards individually customized performance feedback based on students' affective state," at *the NSF-NRI PI Meeting,* Arlington, VA, November 9-10, 2017.

Lopez, C. E., "Mining the dynamics of facial keypoint data for personalized feedback," at *the HENAAC-Great Minds in STEM Conference,* Pasadena, CA, October 18-22, 2017.

Lopez, C. E., "Towards personalized performance feedback by mining the dynamics of facial keypoint data," at *the ACM Richard Tapia Celebration of Diversity in Computing Conference,* Atlanta, GA, September 20-23, 2017.

## Industry Experience

*Century Mold* Rochester, NY
**Industrial/ Manufacturing Engineer** January 2014-May 2015

- Led and participated in process improvement projects throughout the organization to reduce scrap and improve efficiency by implementing Lean and Six Sigma tools.
- Helped the quality department with the Production Part Approval Process (PPAP) and TS16949 audits.
- Worked with manufacturing to improve all ergonomic conditions.
- Supported Program Manager in the launch of new programs.

*Monroe BOCES* #1 Rochester, NY
**Project Coordinator, Pictometry 360 (Summer Co-op)** June 2012-August 2012

- Coordinated with team members on the project's timelines, schedule, and process implementation.
- Organized and created protocols for updating and maintaining the security database in the district.
- Worked with the IT department to create training and reference documents.

*Project Management Office, Finance Ministry* Santo Domingo, D.R.
**Planning and Development Analyst** September 2010-August 2011

- Documented, designed, and redesigned processes to improve efficiency.
- Led a variety of continuous improvement projects throughout the Ministry to reduce waste and variability from internal processes.
- Supported in the logistics of projects and activities related to the institutional strategic plan, such as training, audits, and surveys.

*Lopsa Ltd.* Santo Domingo, D.R
**Operations Coordinator** May 2007-September 2010
**Service Crew Member** June 2006-May 2007

- Coordinated the work plan, material distribution, and the overall logistics of the jobs with engineers and operators.
- Supervised and coordinated the preventive maintenance of equipment and tools.
- Coordinated and executed continuous improvement projects in several key business areas, such as the Packaging and Sales departments.

## Professional Memberships & Honor Societies

- Association for Computing Machinery (ACM)
- American Society of Mechanical Engineers (ASME)
- American Society for Engineering Education (ASEE)
- Society of Hispanic Professional Engineers (SHPE)
- Institute of Electrical and Electronics Engineers (IEEE)
- Honor Society for the Computing and Information disciplines (Upsilon Pi Epsilon)
- National Industrial Engineering Honor Society (Alpha Pi Mu)

## Leadership and Volunteer Services

*Hanson Center for Inclusive STEM Education, Lafayette College* — Easton, PA
**Faculty Director of the Summer Program to Advance Leadership in STEM** — Summer 2026

*The Center for Engineering Outreach and Inclusion, Penn State* — State College, PA
**Dean's CEOI Advisory Board Member** — 2020 – 2023; 2025- present

*Office of Intercultural Development, Lafayette College* — Easton, PA
**International Friendship Program Partner** — August 2019- July 2020

*Center for Engineering Outreach and Inclusion, Penn State* — State College, PA
**Multicultural Engineering Student Volunteer**, events: — October 2017-May 2019

- Society of Hispanic Professional Engineers (SHPE) National Convention, 2018
- Graduate School STEM Fall Open House, 2018
- Multi-Campus Research Experience for Undergraduates 2018, Graduate Panel
- Emerging Research National (ERN) Conference in STEM, 2018
- Society of Hispanic Professional Engineers (SHPE) National Conference, 2017
- Hispanic Engineer National Achievement Award Corporation (HENAAC) Great Minds in STEM Conference, 2017

*Global Programs, Penn State* — State College, PA
**Student Orientation Leader** — May 2018-August 2018

*Center for Leadership & Civic Engagement, RIT* — Rochester, NY
**Student Advisory Board Member** — September 2013-December 2013

*Office of Graduate Education, RIT* — Rochester, NY
**Graduate Student Advisory Committee Member** — April 2013-December 2013
**Graduate Research and Creativity Symposium Committee Member** — April 2013-July 2013

*International Student Services Department, RIT* — Rochester, NY
**Peer Advisor Leader** — April 2013-August 2013

*Student Government, RIT* — Rochester, NY
**Graduate Senator** — May 2013-September 2013

## Certificates & Training

*Center for the Integration of Teaching, Learning, and Scholarship, Lafayette College* — Easton, PA
Inclusive Instructor Academy — May 2022

*The Pennsylvania State University* — State College, PA
Graduate School Teaching Certificate — January 2018

*Johns Hopkins University* — Coursera
Data Science Specialization — January 2018

*Rochester Institute of Technology* — Rochester, NY
Advanced Certificate in Project Management — August 2012-December 2013
Certificate in Organizational Leadership
Certificate in Global Leadership
Six Sigma Black Belt Training
Certificate in Six Sigma Leadership

*The LeaderShape Institute* — Atlanta, GA
Leadership Certificate — July 2013