ADARSH PYARELAL

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EDUCATION

2017 **Ph. D. in Physics**, University of Arizona
Thesis: *Hidden Higgses and Dark Matter at Current and Future Colliders*

2011 **B. A. in Physics**, Reed College
Thesis: *Contribution of the neutral pion Regge trajectory to the exclusive central production of $\eta(548)$ mesons in high energy proton/proton collisions*

PROFESSIONAL APPOINTMENTS

2019 - **Research Scientist**, School of Information, University of Arizona
2020 - **Affiliate Faculty**, Cognitive Science GIDP, University of Arizona
2017 - 18 **Postdoctoral Research Associate**, School of Information, University of Arizona

PUBLICATIONS

Conference/Journal Workshop Poster

2021 L. Zhang, J. Lieffers, and **A. Pyarelal**. Nov. 2021. *Using Features at Multiple Temporal and Spatial Resolutions to Predict Human Behavior in Real Time*. In: AAAI Fall Symposium on Computational Theory of Mind for Human-Machine Teams

P. Soares, **A. Pyarelal**, and K. Barnard. Nov. 2021. *Probabilistic Modeling of Human Teams to Infer False Beliefs*. In: AAAI Fall Symposium on Computational Theory of Mind for Human-Machine Teams

A. Pyarelal, A. Banerjee, and K. Barnard. Nov. 2021. *Modular Procedural Generation for Voxel Maps*. In: AAAI Fall Symposium on Computational Theory of Mind for Human-Machine Teams. arXiv: 2104.08890 [cs.AI]

J. Erikson Pyarelal, S. Schoelen, M. Alt, and **A. Pyarelal**. May 2021. *A Low-Language Alternative for Measuring Academic Science Vocabulary Depth*. In: Symposium on Research in Child Language Disorders (SRCLD). University of Wisconsin-Madison

S. Schoelen, **A. Pyarelal**, J. Erikson Pyarelal, and M. Alt. Jan. 2021. *Sci-Vocab: An open-source web app for studying scientific vocabulary*. In: Annual University of Arizona Undergraduate Biology Research Program (UBRP) Conference. Tucson, Arizona, USA

2020 M. Alexeeva, R. Sharp, M. A. Valenzuela-Escárcega, J. Kadowaki, **A. Pyarelal**, and C. Morrison. May 2020. *MathAlign: Linking Formula Identifiers to their Contextual Natural Language Descriptions*. English. In: Proceedings of The 12th Language Resources and Evaluation Conference. Marseille, France: European Language Resources Association, pp. 2204–2212

A. Pyarelal and S. Su. Jan. 2020. *Higgs Assisted Razor Search for Higgsinos at a 100 TeV pp Collider*. In: Science China Physics, Mechanics & Astronomy. arXiv: 1907.11326 [hep-ph]

C. T. Morrison, P. D. Hein, **A. Pyarelal**, G. Hoogenboom, and C. Porter. Feb. 2020. *Tools to Support Computational Crop Model Analysis and Comparison*. In: Proceedings of the Second International Crop Modelling Symposium (iCROPM2020). Montpellier, France

2019 **A. Pyarelal**, M. A. Valenzuela-Escárcega, R. Sharp, P. D. Hein, J. Stephens, P. Bhandari, H. Lim, S. Debray, and C. T. Morrison. 2019c. *AutoMATES: Automated Model Assembly from Text, Equations, and Software*. (presented at Modeling the World's Systems 2019). arXiv: 2001.07295 [cs.AI]

R. Sharp, **A. Pyarelal**, B. Gyori, K. Alcock, E. Laparra, M. A. Valenzuela-Escárcega, A. Nagesh, V. Yadav, J. Bachman, Z. Tang, H. Lent, F. Luo, M. Paul, S. Bethard, K. Barnard, C. Morrison, and M. Surdeanu. June 2019. *Eidos, INDRA, & Delphi: From Free Text to Executable Causal Models*. In: Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics (Demonstrations). Minneapolis, Minnesota: Association for Computational Linguistics, pp. 42–47

F. Kling, H. Li, **A. Pyarelal**, H. Song, and S. Su. June 2019. *Exotic Higgs decays in Type-II 2HDMs at the LHC and future 100 TeV hadron colliders*. In: Journal of High Energy Physics 2019.6, p. 31

2015 F. Kling, **A. Pyarelal**, and S. Su. Nov. 2015. *Light Charged Higgs Bosons to AW/HW via Top Decay*. In: Journal of High Energy Physics 11, p. 051

GRANTS

2021 Principal Investigator, *Development of an open-source dashboard for team communication experiments*, University of Arizona SensorLab (intramural funding), ($27.288)

2021 Principal Investigator, *Automated real-time detection of closed-loop communication in spoken dialogue*, University of Arizona SensorLab (intramural funding), ($13,540)

2019-23 Principal Investigator, *ToMCAT: Theory of Mind-based Cognitive Architecture for Teams*, Defense Advanced Research Projects Agency, ($7,497,548)

2018-20 Co-Investigator, *AutoMATES: Automated Model Assembly from Text, Equations, and Software*, Defense Advanced Research Projects Agency, ($967,678)

HONORS AND AWARDS

2016,17 Dept. of Physics Publications/Presentations Award

2014,17 Outstanding Graduate Student Colloquium Presentation

2016 Galileo Circle Scholarship

2015 Graduate and Professional Student Council Travel Award
Professor C. Y. Fan 'FanFare' Travel Award
Graduate College Fellowship in Physics

2014-16 APS 4CS Student Travel Grant

MEDIA COVERAGE

2020 *Desi scientist in US is building AI that 'understands' you*, Times of India
Socially savvy artificial intelligence to be developed at UA, Arizona Daily Star

TALKS

2022 *Building machines that understand humans*, SXSW, Austin, TX

2020 *Building machines that understand humans*, Cognitive Science Colloquium Series, Tucson, AZ

2019 *Eidos, INDRA, & Delphi: From Free Text to Executable Causal Models*, TRIPODS 2nd Southwest Summer Conference, Tucson, AZ

Interpreting causal expressions with gradable adjectives to assemble dynamics models, Modeling the World's Systems 2019, Pittsburgh, PA

2018 *Causal Analysis Graphs from Text*, DARPA World Modelers PI Meeting, Arlington, VA

2016 *Machine Learning and Particle Physics*, Tucson Data Science Meetup, Tucson, AZ

A Razor Search for Dark Matter at a Future 100 TeV Collider, Joint Meeting of the Four Corners and Texas Sections of the American Physical Society, Las Cruces, NM

2015 *Light Charged Higgs Bosons in Single-Top Production*, Phenomenology 2015 Symposium, University of Pittsburgh

Light Charged Higgs Bosons in Two Higgs Doublet Models, Annual Meeting of the APS Four Corners Section, Tempe, AZ

2014 *Light Charged Higgs Bosons in Single-Top Production*, Annual Meeting of the APS Four Corners Section, Orem, UT

Light Charged Higgs Bosons to AW/HW via Top Decay, 23rd International Conference on Supersymmetry and Unification of Fundamental Interactions, Lake Tahoe, CA

TEACHING

2017,20 **Organizer**, IVILab Summer Programming Bootcamp
Organized the IVILab Summer Programming Bootcamp in 2017 and 2020. This involved preparing syllabi, writing up instructional materials, giving lectures, grading assignments, and recruiting and coordinating other lecturers.

2011-17 **Teaching Assistant**, University of Arizona
Introduction to Scientific Computing (Spring 2017)
Advanced Lab (Fall 2013-Fall 2016).
Introductory Physics for non-majors - Lecturer (Fall 2012).
Introductory Electricity and Magnetism (2011-12).
Introductory Physics for non-majors - Lab (Summer 2012 & Summer 2014).

SERVICE

Reviewing

Physics (MDPI)

Other

2015 GPSC Travel Grant Judge
2012-13 Member of Physics Grad Council
Member of the Associated Graduate Council for the College of Science
Organized the weekly departmental graduate student seminar series
Arizona Assurance Mentor