

Predrag Radivojac, Ph.D.

Professor

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EDUCATION

2003	Ph.D.	Computer and Information Sciences, Temple University, USA
1997	M.Sc.	Electrical Engineering, University of Belgrade, Serbia
1994	B.Sc.	Electrical Engineering, University of Novi Sad, Serbia

RESEARCH INTERESTS

Bioinformatics and Computational Biology

Understanding protein function and method development for function prediction. Post-translational modifications. Algorithm development for mass spectrometry (MS) and MS/MS proteomics.

Biomedical Informatics and Precision Medicine

Development of computational models for understanding, predicting and experimentally testing molecular mechanisms of disease. Candidate gene prioritization and biomarker discovery. Genome interpretation. Precision health.

Machine Learning

Semi-supervised, structured-output learning and performance evaluation. Kernel-based inference on (hyper)graphs. Learning from biased and relational data. Distance metrics.

PROFESSIONAL EXPERIENCE

2020-	Affiliate Faculty, Roux Institute, Northeastern University, Portland, ME
2020-	Barnett Institute Fellow, Northeastern University, Boston
2020-	Co-director, Data Science Master's Program, Northeastern University
2019-	Professor (by courtesy), Department of Chemistry and Chemical Biology, Northeastern University, Boston
2019-2020	Associate Dean of Research, Khoury College of Computer Sciences, Northeastern University, Boston
2018-	Professor, Khoury College of Computer Sciences, Northeastern University, Boston
2018-2019	Consultant, SeLux Diagnostics Inc., Charlestown
2018	Associate Chair, Department of Computer Science, Indiana University, Bloomington
2016-2018	Co-director, Data Sciences and Informatics, Precision Health Initiative, Indiana University
2015-2018	Professor, Department of Computer Science, Indiana University, Bloomington

2009-2018 Adjunct Faculty, Department of Statistics, Indiana University, Bloomington
 2010-2015 Associate Professor, Department of Computer Science and Informatics, Indiana University, Bloomington
 2005-2010 Assistant Professor, School of Informatics, Indiana University, Bloomington
 2004-2005 Visiting Assistant Professor, School of Informatics, Indiana University, Bloomington
 2004-2005 Consultant, Molecular Kinetics Inc., Indianapolis
 2004 Post-doctoral fellow, School of Medicine, Indiana University, Indianapolis
 2002 Summer Visiting Researcher, Molecular Kinetics Inc., Pullman, Washington
 2001 Summer Software Design Engineer, Natural Language Group, Microsoft Corp., Redmond, Washington
 2000-2003 Teaching and Research Assistant, Temple University, Philadelphia, Pennsylvania
 1994-1999 Associate Instructor and Research Associate (full-time position; 12/1997-12/1998 – military service) School of Engineering, University of Novi Sad, Serbia

TEACHING EXPERIENCE

CS 6220: Data Mining Techniques (Fall 2021)
 CS 6140: Machine Learning (Springs 2019-2021, Falls 2019-2020)
 CSCI-B565: Data Mining (Spring 2016, Spring 2018)
 CSCI-B365: Introduction to Data Analysis and Mining (Falls 2016-2017)
 CSCI-B503: Algorithms Design and Analysis (Fall 2015)
 CSCI-B490: Seminar in Computer Science: Data Mining (Falls 2014-2015)
 CSCI-Y799: Computer Science Colloquium (Falls 2013-2014, Spring 2014)
 CSCI-B555: Machine Learning (Falls 2010-2011, Springs 2013-2015)
 INFO-I211: Information Infrastructure II (Springs 2008-2010)
 INFO-I500: Fundamental Computer Concepts of Informatics (Falls 2005-2009)
 INFO-I619: Structural Bioinformatics (Spring 2006, Spring 2008)
 INFO-I400: Topics in Informatics: Data Mining (Spring 2005)
 INFO-I400: Topics in Informatics: Genes and Blue Genes (Fall 2004)

AWARDS AND HONORS

Honorary Fellow, Institute for Advanced Study, Technical University of Munich, Germany, 2017
 August-Wilhelm Scheer Visiting Professor at Technical University of Munich, Germany, 2016
 Senior Member, International Society for Computational Biology, 2015
 National Science Foundation CAREER Award, 2007
 Graduate student award, Temple University, 2002
 Outstanding young researcher, University of Novi Sad, 1998
 Travel grant, International Symposium on Information Theory, Ulm, Germany, 1997

PROFESSIONAL SOCIETIES

Senior Member, International Society for Computational Biology (ISCB)
 Member, American Society for Mass Spectrometry (ASMS)
 Member, Association for Computing Machinery (ACM)
 Member, American Society of Human Genetics (ASHG)

PROFESSIONAL ACTIVITIES

Board of Directors, International Society for Computational Biology (ISCB), 2012-2021

Associate Editor, PLoS Computational Biology, 2014-

Guest Associate Editor, PLoS Computational Biology, 2013-2014

Guest Editor, Human Mutation, 2016-2017, 2019

Editorial Board member, Bioinformatics, 2010-

Guest Editor, Human Genetics, 2021

Program Chair

Great Lakes Bioinformatics Conference, GLBIO 2015

Proceedings Chair

Intelligent Systems for Molecular Biology and European Conference on Computational Biology,
ISMB/ECCB 2019

Intelligent Systems for Molecular Biology, ISMB 2018

Area Chair

Intelligent Systems for Molecular Biology and European Conference on Computational Biology,
ISMB/ECCB 2007

Intelligent Systems for Molecular Biology, ISMB 2006

Vice Chair

ACM Conference on Bioinformatics, Computational Biology and Biomedicine, ACM BCB 2011

Session Organizer

US-Serbia & West Balkan Data Science Workshop, Belgrade, Serbia, 2018

Pacific Symposium on Biocomputing, PSB 2006-2009, 2017, 2019-2020

Automated Function Prediction Special Interest Group Meeting at ISMB, AFP-SIG 2011-2016

Function Community of Special Interest (COSI) at ISMB, Function-COSI 2017-2019

Program Committees:

Intelligent Systems for Molecular Biology and European Conference on Computational Biology,
ISMB/ECCB 2013, 2017, 2021

Intelligent Systems for Molecular Biology, ISMB 2016, 2020

AAAI Conference on Artificial Intelligence, AAAI 2019-2021

ACM Conference on Bioinformatics, Computational Biology, and Health Informatics, ACM BCB 2015-
2017, 2019-2021

SIAM International Conference on Data Mining, SDM 2020 (meta-reviewer)

ISCB-Asia International Conference on Genome Informatics, GIW/ISCB 2014

International Workshop on Data Mining in Bioinformatics, BioKDD 2003, 2013-2014, 2019

ACM Conference on Bioinformatics, Computational Biology and Biomedical Informatics, ACM BCB
2012-2013

Research in Computational Molecular Biology, RECOMB 2011

Computational Systems Bioinformatics, CSB 2010

European Conference on Machine Learning, ECML 2009-2010
AMIA Summit on Translational Bioinformatics, AMIA STB 2009-2010
SIAM International Conference on Data Mining, SDM 2009
European Conference on Computational Biology, ECCB 2008
Pattern Recognition in Bioinformatics, PRIB 2005-2007
IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology, IEEE
CIBCB 2007

Session Chairing

US-Serbia & West Balkan Data Science Workshop, Belgrade, Serbia, 2018
Intelligent Systems for Molecular Biology, ISMB, 2006-2007, 2013-2014, 2016
ACM Conference on Bioinformatics, Computational Biology and Health Informatics, ACM BCB 2015
ACM Conference on Bioinformatics, Computational Biology and Biomedical Informatics, ACM BCB 2013
Intelligent Systems for Molecular Biology, ISMB, Highlights, 2011-2012
Intelligent Systems for Molecular Biology, ISMB, Late Breaking Research, 2011-2012
AMIA Summit on Translational Bioinformatics, AMIA STB, Late Breaking Research, 2010

Scientific Panels

Panelist, US-Serbia & West Balkan Data Science Workshop, Belgrade, Serbia, 2018
Panelist, Junior Principal Investigators Meeting, International Conference on Intelligent Systems for
Molecular Biology (ISMB 2014), Boston, Massachusetts
Panelist, Pacific Symposium on Biocomputing (PSB 2009), Big Island, Hawaii, 2009
Panel chairperson, Pacific Symposium on Biocomputing (PSB 2008), Big Island, Hawaii, 2008
Panelist, Critical Assessment of Techniques for Protein Structure Prediction (CASP7), Pacific Grove,
California, 2006
Panel chairperson, Pacific Symposium on Biocomputing (PSB 2006), Maui, Hawaii, 2006

Reviewer (journals)

Bioinformatics
Biostatistics
BMC Bioinformatics
Brief Bioinform
Genome Biol
Genomics
Hum Genet
Hum Mutat
IEEE-ACM Trans Comput Biol Bioinform
J Am Stat Assoc
J Bioinform Comput Biol
J Biomed Inform
J Chem Inf Model
J Mach Learn Res
J Mass Spectrom
J Mol Biol
J Proteome Res
Mol Biol Evol

Nat Commun
Nat Methods
Nat Protoc
Nucleic Acids Res
PeerJ
PLoS Comput Biol
PLoS One
PLoS Pathog
Proteins
Proteomics

Reviewer (conferences)

ISIT 2015
AMIA STB 2010, 2011
CSB 2004, 2007
PSB 2004-2005, 2010, 2016
RECOMB 2008
SDM 2003-2004

Grant panelist and reviewer

National Science Foundation, 2008, 2011, 2012, 2019
National Institutes of Health, 2013, 2015, 2016, 2018, 2019, 2020, 2021
Genome Canada, 2012
Ontario Genomics Institute, 2013
Biotechnology and Biological Sciences Research Council, 2016

EDITED VOLUMES

Selected proceedings from the Automated Function Prediction Meeting 2011. *BMC Bioinformatics*, Volume 14, Supplement 3, 2013. Editors: Iddo Friedberg and Predrag Radivojac.
Statistical mass spectrometry-based proteomics. *BMC Bioinformatics*, Volume 13, Supplement 16, 2012. Editors: Predrag Radivojac and Olga Vitek.

ADVISEE AWARDS AND HONORS

Hoyin Chu, 2020, Civic Digital Fellow, Office of Data Science and Emerging Technologies, the National Institute of Allergy and Infectious Diseases.
Justin Delano, 2019, Travel Fellowship for Critical Assessment for Genome Interpretation (CAGI), National Institutes of Health
Kymberleigh Pagel, 2018, Travel Fellowship for Critical Assessment for Genome Interpretation (CAGI) at ISMB 2018
Kymberleigh Pagel, 2017, Ian Lawson Van Toch Memorial Award for Outstanding Student Paper at ISMB/ECCB 2017
Kymberleigh Pagel, 2017, Travel Fellowship for ISMB/ECCB 2017, International Society for Computational Biology

Jose Lugo-Martinez, 2017, Lane Fellowship, Carnegie Mellon University
Shantanu Jain, Computer Science Graduate Research Award, Indiana University
Kymberleigh Pagel, 2017, Travel Fellowship for the Sackler Colloquium on Reproducibility of Research, Washington, DC, National Science Foundation
Vikas Pejaver, 2016, eScience Moore/Sloan Data Science Postdoctoral Fellowship, University of Washington
Shantanu Jain, 2016, Travel Fellowship for NIPS 2016, Barcelona, Spain
Jose Lugo-Martinez, 2015, Travel Fellowship for the Biomedical Data Research Workshop at SHILAC 2015, San Juan, Puerto Rico
Chao Ji, 2015, Travel Fellowship for the ACM BCB 2015 conference, Atlanta, GA, National Science Foundation
Ruiyu Yang, 2015, Full Fellowship for the Math Modeling in Industry XIX Workshop, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, MN
Kymberleigh Pagel, 2015, Travel Fellowship for the Sackler Colloquium on Drawing Causal Inference from Big Data, Washington, DC, National Science Foundation
Yuxiang Jiang, 2014, Travel Fellowship for ECCB 2014
Vikas Pejaver, 2014, Travel Fellowship for the ISCB Student Council Symposium at ISMB 2014
Kymberleigh Pagel, 2014, Travel Fellowship for ISMB 2014, National Science Foundation
Jacob Weimer, 2014, Best Poster Award, Research Experience for Undergraduates, School of Informatics and Computing, Indiana University
Wyatt Clark, 2014, Travel Award for PSB 2014, National Library of Medicine, National Institutes of Health
Wyatt Clark, 2013, Ian Lawson Van Toch Memorial Award for Outstanding Student Paper at ISMB/ECCB 2013
Jose Lugo-Martinez, 2013, Travel Fellowship for 2013 SACNAS National Conference, SACNAS
Jose Lugo-Martinez, 2013, Broadening Participation in Data Mining Travel Scholarship for ACM SIGKDD 2013
Wyatt Clark, 2013, Travel Award for ISMB 2013, International Society for Computational Biology
Wyatt Clark, 2013, Travel Award for the Phenoscope Workshop, National Science Foundation
Kymberleigh Pagel, 2013, Travel Fellowship for CAGI 2013, National Institutes of Health
Jose Lugo-Martinez, 2012, Travel Award for Rocky 2012, Federation of American Societies for Experimental Biology (FASEB), Maximizing Access to Research Careers (MARC) Program
Kymberleigh Pagel, 2012, Travel Award for Rocky 2012, Federation of American Societies for Experimental Biology (FASEB), Maximizing Access to Research Careers (MARC) Program
Jose Lugo-Martinez, 2012, Best Graduate Student Oral Presentation in Computer Science, SACNAS National Conference, Seattle, Washington
Wyatt Clark, 2012, Center for Bioinformatics Research Fellowship, Indiana University
Fuxiao Xin, 2011, Travel Award for Grace Hopper Conference, Portland, Oregon, Women in Informatics and Computing, Indiana University
Fuxiao Xin, 2011, Don Brown Bioinformatics Fellowship, School of Informatics and Computing, Indiana University
Wyatt Clark, 2011, Travel Award for AFP/CAFA SIG at ISMB 2011, National Institutes of Health
Jose Lugo-Martinez, 2011-2012, Computer Packages Inc. Hispanic College Fund Scholarship
Chantel Mikiska, 2011, Hutton Honors College Professional Experience Internship Award
Jose Lugo-Martinez, 2010-2013, Ford Foundation Predoctoral Diversity Fellowship
Jose Lugo-Martinez, 2010-2011, Computer Science Corporation Hispanic College Fund Scholarship
Shuyan Li, 2010, Travel Award for PSB 2010, National Library of Medicine, National Institutes of Health
Jose Lugo-Martinez, 2009-2010, Graduate Scholars Fellowship at Indiana University
Jose Lugo-Martinez, 2009-2010, Google Hispanic College Fund Scholarship
Amrita Mohan, 2007-2009, Fellowship, Eli Lilly and Company Foundation
Pedro Alves, 2007, Travel Award for PSB 2007, National Institutes of Health

Amrita Mohan, 2007, Teaching Award, School of Informatics, Indiana University
 Amrita Mohan, 2007, Travel Award from NSF to attend Academic Workshop for Underrepresented Assistant Professors, Associate Professors, and Senior Doctoral Students, organized by the Coalition to Diversify Computing
 Wyatt Clark, 2006, Travel Award for SDM 2006, Lawrence Livermore National Laboratory
 Narmada Jayasankar, Best Poster Award, InWIC 2006
 Kenneth Daily, 2005, Travel Award for CIBCB 2005, IEEE Computational Intelligence Society
 Stuart Young, 2004, McNair Fellowship, Indiana University

TALKS AND LECTURES

2021, Belgrade Bioinformatics Conference (BelBi 2021), invited talk
 2021, Temple University-NSF Workshop on Understanding Epistasis, invited talk
 2021, Rutgers University-NASA ENIGMA Bioinformatics Boot Camp, invited lecture
 2020, Medical and Population Genetics, Broad Institute of MIT and Harvard, invited talk
 2020, Function COSI Meeting at ISMB 2020, Virtual Conference
 2019, Department of Computer Science, Worcester Polytechnic Institute, invited talk
 2019, Sixteenth Annual Conference of the Midsouth Computational Biology & Bioinformatics Society (MCBIOS 2019), keynote
 2019, Mathematics and CSAIL, Massachusetts Institute of Technology, invited talk
 2018, Icahn School of Medicine at Mount Sinai, invited talk
 2018, Belgrade Bioinformatics Conference (BelBi 2018), Belgrade, Serbia, keynote
 2018, College of Computer and Information Science, Northeastern University, invited talk
 2017, Department of Biochemistry and Microbiology, Rutgers University, invited talk
 2017, IEEE International Conference on Bioinformatics and Biomedicine (IEEE BIBM 2017), Kansas City, Missouri, U.S.A., keynote
 2017, Meeting on Methods & Tools for Assessing the Impact of Genetic Variants, Human Genome Variation Society, Orlando, Florida, U.S.A., keynote
 2016, Challenges in Machine Learning, Workshop at Advances in Neural Information Processing Systems (NIPS 2016), Barcelona, Spain
 2016, Fakultät für Informatik, Technische Universität München, Germany, invited talk
 2015, International Conference on Intelligent Biology and Medicine (ICIBM 2015), invited talk
 2015, School of Engineering, University of Novi Sad, invited talk
 2015, School of Medicine, University of Louisville, invited talk
 2015, Genomics, Bioinformatics & Systems Biology joint colloquium, University of California San Diego, invited talk
 2015, Training the next generation of quantitative biologists in the era of big data, workshop at Pacific Symposium on Biocomputing (PSB 2015), Kohala Coast, Hawaii, invited talk
 2014, Department of Computer Science and Informatics, University of Belgrade, Serbia, invited talk
 2014, International Biocuration Meeting, Toronto, Canada, invited talk
 2013, ACM Conference on Bioinformatics, Computational Biology and Biomedical Informatics (ACM BCB 2013), Bethesda, Maryland, tutorial
 2013, International Workshop on Data Mining in Bioinformatics (BioKDD 2013), Chicago, Illinois, invited talk
 2013, Intelligent Systems for Molecular Biology and European Conference on Computational Biology (ISMB/ECCB 2013), Berlin, Germany, highlights talk
 2013, Critical Assessment of Genome Interpretation (CAGI 2013), Berlin, Germany

2013, Department of Computer Science and Informatics, University of Belgrade, Serbia, invited talk
 2013, Biostatistics Program, Stanford University, invited talk
 2012, Department of Statistics, Indiana University, invited talk
 2012, Data Mining in Bioinformatics (DMB 2012), Belgrade, Serbia, invited talk
 2011, Rocky Mountain Bioinformatics Conference (Rocky 2011), Snowmass Village, Colorado
 2011, Automated Function Prediction Special Interest Group (AFP-SIG) Meeting at ISMB/ECCB 2011, Vienna, Austria
 2011, Post-Genome Wide Association Initiative Meeting, Bethesda, Maryland, invited talk by the National Cancer Institute
 2010, Buck Institute for Research on Aging, invited talk
 2010, Department of Computer and Information Science, Temple University, invited talk
 2010, Department of Computer and Information Science, Delaware State University, invited talk
 2010, Department of Bioengineering and Therapeutic Sciences, University of California San Francisco, invited talk
 2009, Department of Biological Sciences, University of Maryland Baltimore County, invited talk
 2009, Department of Microbiology, Miami University, invited talk
 2009, Genentech Inc., invited talk
 2009, Department of Computer Science and Engineering, University of Notre Dame, invited talk
 2009, Pacific Symposium on Biocomputing (PSB 2009), Big Island, Hawaii, tutorial
 2008, Department of Statistics, Purdue University, invited talk
 2008, European Conference on Computational Biology (ECCB 2008), Cagliari, Italy
 2008, School of Engineering, University of Novi Sad, Serbia, invited talk
 2008, Automated Function Prediction Special Interest Group (AFP-SIG) Meeting at ISMB, Toronto, Canada
 2008, Automated Function Prediction Special Interest Group (AFP-SIG) Meeting at ISMB, Toronto, Canada, tutorial, with Prof. Yanay Ofran, Bar-Ilan University, Israel
 2007, Symposium on Interface: Computing Science and Statistics. Theme: Systems Biology. Philadelphia, Pennsylvania, invited talk
 2006, Methods for Protein Structure Analysis (MPSA), Lille, France
 2006, Annual Indiana Bioinformatics Conference, Indianapolis, Indiana, invited talk
 2006, Indiana Centers for Applied Protein Sciences (INCAPS), Indianapolis, Indiana, invited talk
 2005, School of Engineering, University of Novi Sad, Serbia, invited talk

ACTIVE FUNDING

Machine Learning Approaches towards Risk Assessment and Prediction of Adverse Pregnancy Outcomes

MPIs: David Haas, Indiana University

Predrag Radivojac, Northeastern University

Sriraam Natarajan, University of Texas at Dallas

National Institutes of Health R01 HD101246

08/01/20-07/31/23

Role: MPI

Total award: \$1,622,602

Center for Critical Assessment of Genome Interpretation

PI: Steven Brenner, University of California, Berkeley

National Institutes of Health U24 HG007346

06/01/20-05/31/25

Role: co-I

Total award: \$3,890,307

COMPLETED FUNDING

MathWorks Microgrant. Tools for positive-unlabeled learning: addressing noisy and biased data. Radivojac, P (PI) MathWorks; 05/01/20-04/30/21; Total award: \$25,000.

The Precision Health Initiative. Indiana University Grand Challenges Initiative. PI: Anantha Shakhara, Indiana University School of Medicine. 09/01/16-08/31/21; Past Role: Co-Director for Data Sciences and Informatics (w/ Shaun Grannis, Kun Huang) from 2016-2018. Current Role: The Precision Health Initiative Faculty; Total award: \$120,000,000 (\$13M to School of Informatics, Computing, and Engineering).

Bilateral BBSRC-NSF/BIO Collaborative Research: ABI Development: A Critical Assessment of Protein Function Annotation; 09/01/15-08/31/19; National Science Foundation, DBI-1458477; Total award: \$1,565,332 (USA) + £434,604 (UK). To PR: \$282,204. MPIs-USA: Iddo Friedberg (Iowa State), Casey Greene (U Pennsylvania), Sean Mooney (U Washington), Predrag Radivojac; MPIs-UK: Maria Martin (EBI), Claire O'Donovan (EBI)

A computational framework for predicting the impact of mutations in autism; \$1,370,000 (total award; 2 students per year to IU); 09/25/14-09/24/18; National Institutes of Health, R01 MH105524; MPIs: Lilia Iakoucheva (UCSD) and Predrag Radivojac (Indiana University)

Computational approaches to protein identification and quantification using MS/MS; \$1,890,595 (total award; 1 post-doc, 3 students per year to IU); 10/01/12-08/31/17; National Institutes of Health, R01 GM103725; PI: Predrag Radivojac.

Informatic profiling of clinically relevant mutation; \$1,979,307 (total award; 2 graduate students per year to IU); 09/30/11-08/31/16; National Institutes of Health, R01 LM009722; PI: Sean Mooney, Buck Institute for Research on Aging; Role: co-Investigator.

Automated function prediction (AFP 2014); \$5,000; 06/01/14-05/31/15; National Institutes of Health, R13 HG007807; PI: Predrag Radivojac.

CAREER: Bioinformatics of protein post-translational modifications; \$595,948 (total award; 2 students per year to IU); 07/01/07-06/30/13; National Science Foundation, DBI-0644017; PI: Predrag Radivojac; \$12,500 REU Supplement awarded as of 07/2009 for one additional undergraduate student.

Computational approaches to protein identification and quantification using MS/MS; \$813,146 (total award; 1 post-doc, 3 students per year to IU); 09/15/08-08/31/12; National Institutes of Health, R01 RR024236-01A1; PI: Predrag Radivojac.

Informatic profiling of clinically relevant mutation; \$1,314,515 (total award; 1 post-doc per year to IU); 10/01/07-09/30/11; National Institute of Health, R01 LM009722-01; PI: Sean Mooney, Indiana University School of Medicine; Role: co-Investigator.

Automated function prediction (AFP 2011); \$20,000; 01/01/11-12/31/11; National Institutes of Health, R13 HG006079-01A1; PI: Predrag Radivojac.

APT: the analytical proteomics team; \$5,959,801 (total award; 1 student per year to IU); 10/01/06-08/31/11; National Cancer Institute, U24 CA126480-01; PI: Fred Regnier, Purdue University; Role: co-PI.

The center of excellence in systems microbiology; \$1,895,385 (total award; 1 student per year); 01/01/08-12/31/10; MetaCyt, Indiana University Award; PI: Yves Brun, Indiana University, Department of Biology; Role: co-PI.

A hypothesis testing approach to identification and assessment of statistical significance of peptides and proteins in shotgun proteomics; \$49,919 (total award; 1 student to IU); 01/02/07-12/31/07; CLSIR, Purdue

University - Indiana University pilot grant application program; PI: Olga Vitek, Purdue University; Role: collaborator.

Development of a machine learning tool for peptide identification from tandem mass spectrometry data; \$32,408 (2 students); 06/01/05-05/31/06; Indiana University Faculty Research Support Program; PI: Randy J. Arnold; Role: co-PI.

CURRENT GROUP MEMBERS

Post-doctoral appointments:

Shantanu Jain

Ph.D. students:

Clara De Paolis Kaluza

Yisu Peng

Rashika Ramola

Daniel Zeiberg

Undergraduate students:

Hoyin Chu

Justin Delano

THESES ADVISED

Yuxiang Jiang

Thesis title: Protein function prediction and its application to prioritizing disease-associated mutations

Program: Computer Science, Indiana University

Defense: June 29, 2020

First Ph.D. position: Software engineer, Google, Mountain View, California

Kymerleigh Pagel

Thesis title: Computational assessment of the molecular mechanisms impacted by genetic variation

Program: Informatics, Indiana University

Defense: November 29, 2018

First Ph.D. position: Post-doctoral fellow, Johns Hopkins University, Baltimore, Maryland

Shantanu Jain

Thesis title: Algorithms and approaches for positive-unlabeled learning

Program: Computer Science, Indiana University

Defense: August 15, 2018

First Ph.D. position: Associate Research Scientist, Northeastern University, Boston, Massachusetts

Ruiyu Yang

Thesis title: Different methods for phylogenetic reconstruction and their properties

Program: Mathematics, Indiana University

Defense: December 12, 2017

First Ph.D. position: Data Scientist, JP Morgan, New York, New York

Jose Lugo-Martinez

Thesis title: Flexible kernel functions for learning on graphs and hypergraphs

Program: Computer Science, Indiana University

Defense: December 12, 2016

First Ph.D. position: Post-doctoral Fellow, Indiana University, Bloomington, Indiana

Currently: Lane Fellow, Carnegie Mellon University, Pittsburgh, Pennsylvania

Vikas Pejaver

Thesis title: Computational methods for understanding the impact of amino acid substitutions on protein function

Program: Informatics, Indiana University

Defense: November 17, 2016

First Ph.D. position: eScience Moore/Sloan Data Science Post-doctoral Fellow, University of Washington, Seattle, Washington

Chao Ji

Thesis title: Machine learning algorithms for peptide identification and protein quantification in proteomics

Program: Informatics, Indiana University

Defense: April 11, 2016

First Ph.D. position: Research Associate, Indiana University, Bloomington, Indiana

Wyatt Clark

Thesis title: Understanding protein function through statistical inference and evolutionary analysis

Program: Informatics

Defense: June 4, 2013

First Ph.D. position: Post-doctoral Fellow, Yale University, New Haven, Connecticut

Currently: Scientist 1, Bioinformatics, Research & Development, BioMarin Pharmaceutical Inc., Novato, California

Fuxiao Xin

Thesis title: Methods for predicting functional residues in protein structures and understanding molecular mechanisms of disease

Program: Informatics, Indiana University

Defense: July 12, 2012

First Ph.D. position: Lead Scientist in Machine Learning, General Electric Global Research, San Ramon, California

Yong Li

Thesis title: Statistical learning algorithms for protein inference and quantification in proteomics

Program: Informatics, Indiana University

Defense: August 11, 2011

First Ph.D. position: Senior Biologist, Dow AgroSciences LLC, Indianapolis, Indiana

Amrita Mohan

Thesis title: A systematic study of intrinsic disorder and its roles in functional proteomics

Program: Informatics, Indiana University

Defense: October 23, 2009

First Ph.D. position: Research Fellow in Cancer Systems Biology, OSI Pharmaceuticals, Melville, New York

Currently: Director of Bioinformatics Data Science, CHDI Management Inc., Princeton, New Jersey

SCHOOL SERVICE

Northeastern University: Khoury College of Computer Sciences:

Associate Dean of Research, 2019-2020

Hiring committee, 2018-2019

Merit committee, 2019

Promotion committee, chair, 2019

Co-Director, Master's of Science in Data Science, 2020-

Indiana University: School of Informatics, Computing, and Engineering:

Director of the Computer Science Ph.D. Studies, 2010-2012

Proposed a new Ph.D. curriculum; Approved by Computer Science faculty and University Graduate School

Graduate Admissions Committee, 2004-2006, 2007-2008

Undergraduate Education Committee, 2006

Strategic Research Committee, 2007

Structure Committee, 2016

Colloquium Committee, 2007-2008, 2013-2014

Hiring Committee(s), 2008, 2010, 2011-2012 as chair, 2013-2014, 2016-2017 as chair, 2017-2018 as chair

Space Committee, 2010

Web Steering/Oversight Committee, 2010-2011, 2013-2014

Budgetary Affairs Committee, 2014-2017

Faculty Affairs Committee, 2014-2016

Promotion & Tenure Committee, 2017-2018

Numerous other responsibilities; e.g., promotion committees, curriculum subcommittees, hiring subcommittees, task forces, etc.

Indiana University:

Department of Statistics Hiring Committee, 2014-2015

Statistics Coordination Committee, 2013-2016

Advisory Board member, Institute for Advanced Studies, Indiana University, 2013-2015

AGEP* Professor, 2004-2018

*Alliances for Graduate and Professoriate Program (AGEP) is an alliance addressing national minority education challenge and promoting participation of minorities.

ONLINE PREPRINTS

1. Jain S, White M, Trosset MW, Radivojac P. Nonparametric semi-supervised learning of class proportions. (2016) arXiv: 1601.01944.
2. Radivojac P. A (not so) quick introduction to protein function prediction. (2013).

COMPLETE PUBLICATION LIST

3. Karanam A, Hayes AL, Kokel H, Haas DM, Radivojac P, Natarajan S. A probabilistic approach to extract qualitative knowledge for early prediction of gestational diabetes. *Proceedings of the 19th International Conference on Artificial Intelligence in Medicine, AIME 2021, Virtual Event*, pp. 497-502.
4. Wang RJ, Radivojac P, Hahn MW. Distinct error rates for reference and non-reference genotypes estimated by pedigree analysis. *Genetics* (2021), 217(1): iya014.
5. Lugo-Martinez J, Zeiberg D, Gaudet T, Malod-Dognin N, Pržulj N, Radivojac P. Classification in biological networks with hypergraphlet kernels. *Bioinformatics* (2021), 37(7): 1000-1007.
6. Peng Y, Jain S, Li YF, Gregus M, Ivanov AR, Vitek O, Radivojac P. New mixture models for decoy-free false discovery rate estimation in mass-spectrometry proteomics. *Bioinformatics* 36(Supplement_2): i745-i753.
7. Pejaver V, Urresti J, Lugo-Martinez J, Pagel KA, Lin GN, Nam HJ, Mort M, Cooper DN, Sebat J, Iakoucheva LM, Mooney SD, Radivojac P. Inferring the molecular and phenotypic impact of amino acid variants with MutPred2. *Nat. Commun.* (2020) 11(1):5918.
8. Stamboulian M, Guerrero RF, Hahn MW, Radivojac P. The conjecture revisited: the value of orthologs and paralogs in function prediction. *Bioinformatics* (2020) 36(Supplement_1): i219-i226.
9. Wang RJ, Thomas GWC, Raveendran M, Harris RA, Doddapaneni H, Muzny DM, Capitanio JP, Radivojac P, Rogers J, Hahn MW. Paternal age in rhesus macaques is positively associated with germline mutation accumulation but not with measures of offspring sociability. *Genome Res.* (2020) 30(6):826-834.
10. Naidu JS, Delano JD, Mathews S, Radivojac P. An examination of citation-based impact of the computational biology conferences. *Bioinformatics* (2020) 36(9): 2958-2962.
11. Jain S, Delano JD, Sharma H, Radivojac P. Class prior estimation with biased positives and unlabeled examples. *Proceedings of the 34th AAAI Conference on Artificial Intelligence, AAAI 2020*, pp. 4255-4263, New York, New York, U.S.A., February 2019.
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MISCELLANEOUS AND TRIVIA

- Erdos number: 3, via Stefano Lonardi and Svante Janson
- Bacon number: ∞
- Kardashian index: 0.261 (June 2021)
- CASP7 – second best predictor of protein function; category of difficult-to-infer functions (team: IUBInfo)
- CASP5, CASP6, CASP7 – best predictor for intrinsically disordered proteins (team: ISTZoran)
- CAFA1, CAFA2, CAFA3, CAFA4 – organized the first, second, third, and fourth Critical Assessment of Functional Annotations in 2010-2011, 2013-2014, 2016-2017, 2019-2020 (with Iddo Friedberg, Sean Mooney, Michal Linial, Casey Greene).
- CAGI – Mooney-Radivojac group performed well in multiple CAGI challenges in CAGI 1-5.
- Paper “Intrinsic disorder and functional proteomics” by Radivojac et al. in 2007 was the first article in the *Biophysical Journal* labeled as “Biophysical Reviews and Perspectives” (but not the first review ever)
- According to the Mathematics Genealogy Project (MGP), maintained at the North Dakota State University, some of my famous scientific (great)ⁿ grandfathers are Alonzo Church (6th generation), Joseph-Louis Lagrange, Leonhard Euler, and Jacob Bernoulli.
- My name in the Serbian Cyrillic alphabet: Предраг Радивојац

CASP stands for the "Critical Assessment of techniques for protein Structure Prediction".

CAFA stands for the "Critical Assessment of Functional Annotation".

CAGI stands for the "Critical Assessment of Genome Interpretation".