ESHEL FARAGGI

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⋄ *Unique and passionate physicist with over 30 years experience in predicting the outcome of complex systems. Leading developer for a framework to predict the scaling of hysteresis, laser absorption by the retina, and the 3D structure of proteins. Responsible for implementing the bi-modal distribution of the protein dihedrals into protein structure prediction tools. Was among the first to introduce ML into 3D protein prediction. Over 15 years experience in ML and AI. A pioneer of this approach in bioinformatics.* Mechanics, E&M, Fluid Dyn., Machine Learning, FORTRAN, C/++, Matlab, Math., Linux, BASH, Perl, Python, JAVA, MS Word, Excel, PowerPoint, Empath, Photographer, Musician, Carpenter

EDUCATION

PH.D. Physics *University of Texas at Austin, Austin, Texas, USA* **2003**

⋄ Thesis title: *Ferromagnetic properties of partially filled two-dimensional Ising lattices*

⋄ Mean field and Ising models of percolating ferromagnets and hysteresis

B.SC. Physics/Mathematics *Hebrew University, Jerusalem, Israel* **1996**

EXPERIENCE

ADJUNCT PROFESSOR

Department of Physics, Indiana University Indianapolis (IUPUI), Indianapolis, IN **2017–Now**

⋄ Teaching undergraduate physics.

PRESIDENT

Research and Information Systems, LLC, Indianapolis, IN **2012–Now**

⋄ Machine learning in protein structure and variation. Electromagnetism in biological cell division. Understanding nuclear structure from only electromagnetic charge and its quantum interaction.

CONSULTANT

Battelle Center for Mathematical Medicine, Nationwide Children's Hospital, Columbus, OH **2012–2024**

⋄ Machine learning models for protein structure prediction and predicting the effect of genetic variation. The role of entropy in protein structure.

VISITING PROFESSOR

Dept. of Biochem. and Mol. Bio., Indiana University School of Medicine, Indianapolis, IN **2012–2017**

⋄ Machine learning in protein structure and disorder.

RESEARCH ASSOCIATE

CCBB, School of Informatics, Indiana University Purdue University, Indianapolis, IN **2007–2012**

⋄ Predicting protein dihedrals, ASA, disorder, and 3D structure.

RESEARCH ASSOCIATE

Department of Physics, Florida International University, Miami, Florida **2003–2007**

⋄ Fluid/solid thermodynamic modelling for laser/retina interaction.

SELECTED PUBLICATIONS

2022 ⋄ Faraggi, E; There is only charge: Heisenberg-Coulomb based theory of the quarks, nucleons, and the nuclei. **Authorea Preprints.**

2014 ⋄ Faraggi E & Kloczkowski A; A global machine learning based scoring function for protein structure prediction. **Proteins, 82, 752**

2012 ⋄ Faraggi E; Symmetrical charge-charge interactions in ionic solutions: implications for biological interactions **arxiv.org/abs/1201.0556**