Nicholas Attila Kovacs

Bioinformaticist & Data Scientist

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Expertise

- Computational biologist seeking to apply intellectual curiosity, creativity, and problem solving-skills as a consultant at BCG
  - Productive computational scientist with 139 citations from the past 6 years
  - Spearheaded the transition of a theoretical model to a computational project resulting in two, 1st-author scientific publications with 3rd in preparation.
  - Coauthor of 7 multidisciplinary scientific publications with experimental and computational scientists and engineers
  - Managed 8 senior undergraduates per semester for 6 semesters as a teaching assistant
  - Independently wrote and awarded NSF grant to conduct summer research in Taiwan
  - Presented research as oral and poster presentations at conferences in Japan, Vietnam, and US
  - Research mentor and project manager of undergraduate for one year

Education

Ph.D. Bioinformatics GPA: 3.5 — *Aug 2013 - Dec 2018*
Georgia Institute of Technology — *Atlanta, GA*

B.S. Biochemistry and Molecular Biology/Biotechnology GPA: 3.3 — *Aug 2008 - May 2012*
Michigan State University — *East Lansing, MI*

Experience

Graduate Research Assistant — *Aug 2013 - Current*
Georgia Institute of Technology — *Atlanta, GA*

Dissertation: *Data Mining the Atomic Structure of the Ribosome to Unravel the History of Protein Folding*

- **Summary**: Applied structural bioinformatics methods and machine learning algorithms such as clustering to atomic coordinate datasets from over 100 biomolecules composed of 150,000-200,000 atoms to unravel the interralatedness and origin of life.
- **Results**: Two 1st-author research articles published. 3rd in preparation.
- **Funding**: NASA Astrobiology Institute
- **Collaboration**: Provided computational analysis for coworkers projects; resulted in coauthor of 2 experimental and 4 computational research articles.
- **Communication**: Independently wrote and awarded $7,000 NSF grant to support summer research in Taiwan. Oral and poster presentations at 7 domestic and international scientific conferences.
- **Mentoring**: Awarded $2,500 conference and travel funding for mentoring undergraduate student.
- **Courses**: 9 courses in biochemisty, computational biology, statistics, and computer science. Concept-to-Market business short-course completed.

Atomic Interaction Network Analysis of the Ribosome — *Fall 2017*
Course Project for CS 7280 - Network Science — *Atlanta, GA*

- Collaborated with a team member to apply course concepts and algorithms to 3 atomic interaction networks of the biomolecule, the ribosome, each composed of more than 100,000 edges between approx. 50,000 nodes.
- **Results**: Predicted RNA and protein folding domains within the ribosome by applying community detection algorithms.

Graduate Teaching Assistant — *Aug 2013 - Dec 2016*
Georgia Institute of Technology — *Atlanta, GA*

- **Biophysical Chemistry Lab(CHEM 4582)** - 6 semesters - Instructed ~8 undergraduate students on experimental and computational protocols.
- **Macromolecular Structure(CHEM 6572)** - 2 semesters - Directed ~25 graduate students on the use of computational modelling programs.
- **Survey of Biochemistry(CHEM 3511)** - 1 semester - Guided ~40 undergraduate students to solve homework problems in weekly recitation.

Analysis and Interpretation of NGS Data from CDC — *Aug 2014 - May 2015*
Course Project for BIOL 8803B - Programming for Bioinformatics and BIOL 7210 - Computational Genomics — *Atlanta, GA*

- Worked in multidisciplinary teams of biologists and computer scientists to identify pathogens from DNA sequences provided by the CDC.
- Analyzed 97 NGS single-end and paired-end reads of *Neisseria meningitidis*, *Haempophilus influenza*, and *Haemophuilus haemolyticus* generated from GAII or Illumina HiSeq/MiSeq instruments.
- **Results**: Developed a typing-tool that identifies the organism and its serotype/serogroup from DNA sequence file inputs and constructed a genome browser of 53 annotated genomes to view annotated genomes.

Skills & Interests

Computational Acumen	Python, R, SQL, Bash, Perl, MATLAB, Javascript, Git, Spark, Hadoop, Tableau, Adobe
Computational Sciences	Structural Bioinformatics, Next-Generation Sequencing, Molecular Dynamics, Drug Docking
Data Science	Machine Learning, Network Science, Statistics, Software Engineering
Experimental Sciences	Molecular Biology, Biochemistry, Organic Chemistry, Analytical Chemistry
Personal Interests	Bodyweight fitness, snowboarding, guitar, world travel, bachata dance, Korean-culture