JONATHAN M. NOWACKI M.Sc. M.B.A.

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PROFESSIONAL SUMMARY- LIFE LONG

Experienced professional with a unique combination of biological, computer and business skills. Master's degrees in both business (M.B.A.) and bioinformatics (M.Sc.). Highly diversified experiences and notable achievements including working for NASA, working on a device that is now in the Smithsonian Institute, organizing events with some of the world's best acrobats and I routinely supported high value customers such as M.I.T., Department of Homeland Security, Dow, Mayo Clinic, Yale and more on a daily basis. Strengths include big data, informatics, biology and economics.

BUSINESS EXPERIENCE & AWARDS

Butler University MBA Program

- Capstone Project: Worked with the executive team of a midsize enterprise big data / IT company to identify where their company was losing money and develop a strategy for future business growth. Presented findings and solutions to executive management.
- Marketing Research Course: Semester long project involving teams of four people and a computer simulation utilizing real world data to test our ability to analyze markets and competitor strategy. My main roles were to process market data and visualize trends to facilitate strategy formation during team meetings.
- Worked in a team of five to help H.H. Gregg. find solutions for their problems. The executive team of H.H. Gregg listened to a significant number of teams presenting ideas. H.H. Gregg chose my team as the one that provided them with the best business ideas and presented our team with a celebratory plaque.

Bioinformatician, Kapa Biosciences (A Roche Company)

- Worked with marketing to produce a competitor comparison to support the sales team. This resulted in convincing data that our products were significantly more cost effective than the competition in scanning for a wide range of medically relevant genes. This includes, but was not limited to, showing a 7 fold improvement compared to the competition when scanning for the famous breast cancer genes BRCA1 and BRCA2.
- I used a competitor comparison analysis, that I developed with marketing, to give a 25 minute presentation at the largest international human genetics conference in the world. The video titled "Maximize Value with Target Enrichment", was presented at the American Society of Human Genetics (ASHG) in 2020. This video is available at: https://youtu.be/kGicPOvh2iw

Technical Applications Consultant, 454 Life Sciences (A Roche company)

- Executed marketing projects, created promotional posters and made customer facing presentations at scientific conferences.
- Assisted Roche's marketing department in multiple user group meetings and crafting brochures.
- Executed projects, created promotional posters, and made customer facing presentations at scientific conferences.
- Assisted Roche's marketing department by developing graphical data for the GS FLX's cameo in the movie Contagion which starred Matt Damon, Kate Winslet and Jude Law.
- Supported and managed High Performance Computing (HPC) Clusters at top institutions across the world. No matter what the problem, I made sure they were up and functioning with minimal

downtime.
- Routinely coordinated the travel and dispatching of engineers and Ph.D. level field support across North America to ensure high value customers worth millions continued to function.

Roost Acrobatic Loft
- Served as co-founder for training facility for advanced partner acrobatics.
- Organized, executed, and promoted sporting events specifically for partner acrobatics workshops utilizing teachers from around the world including but not limited to teachers from Cirque Du Soleil, the Broadway Production Pippin, AcroArmy, and Cheerleaders from the Tennessee Titans.

Indianapolis Sports
- Won Best Salesman Award.

Other Highlighted Experiences
- Founded Rakeback News, a successful marketing site for online card games.
- Volunteer cold calling work for non-profit organizations (e.g. Dollars for Scholars)
- Leadership experience as an Eagle Scout directing large volunteer projects involving hundreds of man hours and scores of volunteers.

TECHNICAL EXPERIENCE & ACHIEVEMENTS

Bioinformatics Programmer, Kapa Biosciences (A Roche company)
- I performed a competitor comparison analysis, developed with marketing, to give a 25 minute presentation at the largest international human genetics conference in the world. The video titled "Maximize Value with Target Enrichment", was presented at the American Society of Human Genetics (ASHG) in 2020. This video is available at: https://youtu.be/kGicPOvh2iw
- Developed bioinformatics pipelines for demultiplexing as well as the analysis of genomic, sequence capture, epigenetic, transcriptome and metagenomics high throughput sequencing data.
- Used Jira, Atlassian and smartsheets to manage projects.
- Combined cluster and cloud tools with bioinformatics tools to process Terabytes of genomic information while maximizing the utilization of 128 CPU cores. Parallel processing, out of order processing and job scheduling were all implemented.
- Managed large genomic data repositories using automated backup and cleanup procedures.
- Provided statistical analysis of datasets using R statistical package and other tools to produce Venn diagrams, correlation plots, regression analysis and much more.
- Developed bioinformatics software to analyze whole genome shotgun sequencing, metagenomics, sequence capture, RNA, gc bias, epigenetics and more.
- Placed in the top tier of a machine learning competition (RAAD challenge) which used machine learning to analyze biomarkers and medical records to predict mortality rate among 7 different types of cancer patient groups. We used Pandas, Scikit-learn, Jupyter Notebooks, Extreme Gradient Boosting (xgboost) and specialized libraries.

Technical Applications Consultant, 454 Life Sciences (a Roche company)
- Worked on the 454 GS FLX, a machine later placed in the Smithsonian Institute and highlighted in the article: "The Big, Refrigerator-Sized Machine That Saved Chocolate"
    - Gupta, Anika. "The Big, Refrigerator-Sized Machine That Saved Chocolate." *Smithsonian.com*, Smithsonian Institution, 31 Aug. 2015, www.smithsonianmag.com/smithsonian-institution/big-hulking-gene-sequencer-saved-c

hocolate-180956321.

- Provided customer support for next generation sequencing platforms such as the 454 GS FLX, FLX+ and GS Junior sequencer. Support included hardware, software, IT, networking, chemistry, run analysis and much more.
- Provided customer support for robots such as the Thermo Scientific Orbiter and qQPR platforms such as the Light Cycler 480 and 1536.
- Provided customer support for the Nimblegen sequence capture technology including building a pipeline for processing raw sequence files and converting them to alignment files to be used in a Genomics Viewer.
- Routinely coordinated service and support efforts across the northern continent using engineers, chemists, sales and biologists.
- Helped train and support countless customers with gsMapper, gsAssembler, Linux commands, amplicon analysis and other aspects of 454 sequencing.
- Provided IT support for PSSC Labs GS FLX Titanium cluster as well as countless other custom clusters and workstations.
- Assisted with on-site training at sites such as Amgen and the Department of Homeland Security's (DHS) *National* Biodefense Analysis and Countermeasures Center (NBACC).
- Developed cloud computing protocol compatible with the 454 sequencing technology.

Computational Biologist, Indiana University School of Medicine
Sean Mooney, Ph.D.

- Took lead in developing a bioinformatics knowledge base for the IU School of Medicine. A process that involved reviewing hundreds of abstracts and bioinformatics tools as well as programming in PHP, AJAX, jQuery, Javascript, MySQL and SQLite.
- Developed website for inventory tracking and automated e-mailing using Perl & MySQL.
- Assisted with Consortium on Breast Cancer Pharmacogenomics (COBRA) software project using PHP, MySQL and Javascript.

- Used Perl and MySQL for parsing and formatting of bioinformatics information to be piped into 3D visualization software.
- Packaged and programmed bioinformatics software for distribution and cross-platform portability by utilizing PHP, MSSQL, MySQL, postgreSQL, SQLite and Nullsoft Scriptable Install System (NSIS).
- Aided in the development of laboratree.org by programming in CakePHP, PHP, Perl and MySQL.

Computational Biologist, Indiana University School of Medicine
Samy Meroueh, Ph.D.

- Structure prediction using Tripos, Sp3 and various other techniques.
- Motif analysis including but not limited to writing Perl Scripts.
- Developed a Perl based program for the creation of videos of proteins for the purpose of aiding the comparison of APO vs. ligand motion.
- Aided in the construction of a database of receptor-ligand interactions with two and three-dimensional structures. Database also includes binding thermodynamics from isothermal titration calorimetry for aiding in virtual screening of drugs.
- Implemented the Perl language for protein data parsing and analysis.
- Rendered the image on the cover of Chemical Biology & Drug Design, May 2007 - Vol. 69 Issue 5 Page 291-379.

Graduate Researcher, Indiana University
Advisor: Sun Kim, Ph.D.

- Analyzed *Coprinus* genome using micro-satellite mapping and gene identification algorithms.
- Developed a database using Perl and SQL in a Unix environment. The database included statistical analysis tools as well as a search engine. The purpose of which was to aid in the analysis of the *Coprinus* genome.
- Implemented Gbrowse for database visualization.

Research Assistant, Indiana University
Mimi Zolan, Ph.D.
- PCR mapping of the *Coprinus* genome.
- Analyzed the genome using various gene identification techniques.

Computational Biology Assistant, Marine Biological Laboratory, Josephine Bay Paul Center - Global Infectious Disease Program & NASA Astrobiology Lab
Andrew G McArthur, Ph.D., Mitchell Sogin, Ph.D.
- Co-wrote genomics pipeline using Perl and MySQL in a Unix environment which performed close-to-real-time statistical analysis and visualization of genomic data from the high-throughput sequencing lab.
- Performed hardware analysis and documentation.
- Wrote ClusterFitch which used a portable batch system to run Fitch on a Beowulf cluster.
- Performed bioinformatics benchmarks on various Linux and Unix machines.

Research Assistant, Center of Genomics and Bioinformatics
- Assisted in the CGB website development, bioinformatics services, and installing web-servers and other hardware.
- Provided technical support for numerous laboratories.

Research Assistant, Indiana University
Mimi Zolan, Ph.D.
- Searched and mapped out all the BRCT and FHA domains in the *Coprinus* genome.
- Assembled a fragmented *Coprinus* genome by constructing contigs with Phred/Phrap.
- Analyzed the genome using various gene identification techniques.
- Installed a Linux web-server running Apache and Tomcat (http://parazen.bio.indiana.edu).

SKILLS

BIOINFORMATICS AND BIOLOGY SKILLS

- **Bioinformatics Software:** Phred/Phrap, Consed, GCG, EMBOSS, BLAST, Clustalw/Clustalx, PAUP, Gbrowse, MEME, MrBayes, Sybyl, Pymol, Autodock, Amber, Antechamber, FUGUE, Orchestrar, tleap, VMD, Bismark, Genome Analysis Toolkit (GATK), Picard, Novosort, Fastqc, Spades, BWA, BWA-MEM, Trimmomatic, Fastqc
- **Algorithms and Concepts**: Data mining, Parallel processing, Evolutionary tree/Phylogenetic analysis, Fragment assembly, Multiple sequence alignment, Hidden Markov models, Position-specific scoring matrix, Smith-Waterman, Bayes theorem, Multiple Regression
- **Database Familiarity**: TIGR, GenBank, Prosite, Swissprot, *Coprinus cinereus* database, PubMed, Pubchem, Zinc, RCSB, etc.
- **Wetlab Techniques**: Bacterial culturing processes, Mycological culturing processes, DNA cloning, Primer design, PCR, Chromatography, Gel electrophoresis (agarose and polyacrylamide), RFLP mapping

COMPUTER SKILLS

- **Programming:** Python, git, Jira, Atlassian, Perl, BioPerl, PHP, cakePHP, Unix scripting,

HTML, XML, C++, JavaScript, BASIC, Visual Basic, Java, awk, sed, snakemake, AJAX, jQuery, Nullsoft Scriptable Install System (NSIS), conda, anaconda, mamba, singularity, docker, Jupyter Notebooks, CVS, bitbucket, cloud computing

- **Bioinformatics tools:** GATK, samtools, bwa, bismark, STAR, bbmap, fastp, trimmomatic, picard
- **Relational Database Experience:** PostgresSQL, Oracle, SQL, MySQL, MSSQL, SQLite
- **Operating Systems:** Windows, Novell Netware, Unix, Linux, AIX, Redhat (RHEL), Ubuntu
- **Unix Related:** Tomcat, Apache
- **Networking:** Ethernet, installation of switches, routers, and ethernet cable
- **Miscellaneous:** CVS, Smarty, building and troubleshooting computer and server hardware, and local area networks

WORK HISTORY

August 2015-Current	**Senior Technical Service Consultant**, Kapa Biosciences (A Roche Company)
August 2008-August 2015	**Technical Applications Consultant**, 454 Life Sciences (A Roche Company)
May 2007-August 2008	**Computational Biologist**, Indiana University School of Medicine, Center for Computational Biology and Bioinformatics Core
November 2006-May 2007	**Computational Biologist**, Indiana University School of Medicine
May-August 2005	**Graduate Researcher**, Indiana University
August 2004-April 2005	**Research Assistant**, Indiana University
May-August 2004	**Computational Biology Assistant**, Marine Biological Laboratory Josephine Bay Paul Center - Global Infectious Disease Program & NASA Astrobiology Lab
January-May 2004	**Research Assistant**, Center of Genomics and Bioinformatics
August 2003-May 2004; May-August 2002	**Research Assistant**, Indiana University

EDUCATION

Master of Business Administration — Indianapolis, Indiana
Butler University — Graduated August 2017

Master of Science: Bioinformatics — Bloomington, Indiana
Indiana University — Graduated May 2006

Bachelor of Science: Biology — Bloomington, Indiana
Indiana University — Graduated May 2002