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DATA SCIENTIST

Looking for a challenging and stimulating data scientist/statistician/developer position to continue professional growth. Established academic researcher with Harvard education and a lifelong passion for learning and data science. Have strong background in data science, statistics, object-oriented design, GUI programming, scientific code writing, high-performance computing.

TECHNICAL SKILLS SUMMARY

Data science: model development/fitting, BIG data, data mining, pipeline execution/modification, databases
Languages: Java, C/C++, Pascal, Delphi, TCL, HTML, CGI, Wolfram Mathematica, LaTeX, SQL
Design/Concepts: object-oriented design, code optimization, code testing, quality assurance, automatic code generation, OpenMP parallelization, cross-platform implementation
Platforms: Windows, Linux, and UNIX in cluster environment

DATA SCIENCE EXPERIENCE

Model development and fitting
- ✓ developed multiple testable models for gas behavior near black holes
- ✓ performed a variety of statistical tests (χ^2 tests, t tests, linear regression, KS tests etc.) comparing simulated and observed data for selected models
- ✓ developed and ran Monte Carlo Markov chain (MCMC) parameter estimators for X-ray data fitting
- ✓ performed timing analysis of simulated data quantifying quasi-periodic oscillations (QPOs) and power-spectrum density (PSD) breaks, made predictions for timing analysis of future telescope data
- ✓ successfully quantified patterns of temperature across US and deviations from forecasts based on historic data within 2010 degreeTrade financial simulation competition by DC Energy to become Round 1 Winner (prize: Apple Ipad, retail value 629$)

BIG data
- ✓ experience analyzing, reprocessing, and visualizing: 3TB fluid dynamic simulations data
- ✓ employed fluid simulations data as input for my ray tracing code ASTRORAY

Data mining
- ✓ mining corporations/salaries data from Glassdoor (and API) for a social science project on income inequality and prosocial behavior (w/ Prof. Sreedhari Desai)
- ✓ compiled geospatial data from YellowPages/WolframAlpha for a project on proximity of corporate headquarters to macro reminders of childhood and prosocial behavior (published in Harvard Business Review)
- ✓ developed a server-based data-mining robot (CGI script)
- ✓ participated in building of an ad-posting robot (CGI script)

Data pipeline execution/modification
- ✓ extracted and reduced data from Hubble, Chandra, and Swift satellites for several scientific projects

Databases: SQL, mySQL, JDBC
- ✓ basic experience: self-study course, executing/modifying queries in mySQL, integration w/ Java

SOFTWARE DEVELOPMENT EXPERIENCE

3yrs Delphi object-oriented programming, GUI programming
- ✓ developed Windows user application which tests guessing/extrasensory abilities
- ✓ developed a sorting aid application for visual selection of exam questions

5yrs C/C++ scientific code development
- ✓ developed a unique massively parallel ASTRORAY code (2700 lines) for ray-tracing near black holes, wrote code documentation, released to public
- ✓ published ASTRORAY code internal testing and convergence testing results for quality assurance

- ✓ developed fast and precise computation of Bessel functions using integral representation
- ✓ disseminated pieces of original C/C++ code to other research group members

Java
- ✓ Oracle Certified Associate, Java SE 7 Programmer (93% exam score)

Linux, UNIX
- ✓ used and maintained multiple distributions as primary desktop systems, in virtual machines (Ubuntu, Fedora, CentOS), integrated in Windows (Cygwin), and in supercomputer environment (UNIX)

15yrs Wolfram Mathematica
- ✓ automatic code generation for C
- ✓ test case design and execution
- ✓ scientific computations, model development and fitting, timing analysis, visualization of results
- ✓ employed for each of 15 successfully completed projects

Software version control
- ✓ SVN stand-alone and integrated in MVS, GIT; employed for both code and reports/papers

TCL scripting
- ✓ developed an envelope for a scientific software package employed in 2 research projects

High-performance computing (national XSEDE facilities; Harvard, UMD, and Stanford clusters)
- ✓ OpenMP parallel code development, execution, and optimization; scaling tests
- ✓ finding parallelization setup optimal for CPU load, I/O load, intra- and inter-node memory bandwidth

PROFESSIONAL SKILLS

Excellent ability to work both independently and in a team
- ✓ finished 5 projects independently and 10 projects as a part of a team/collaboration
- ✓ worked with 5 different teams, initiated setting up teams
- ✓ co-advised 2 junior team members on projects

Code testing and quality assurance
- ✓ published internal tests and convergence tests of C/C++ ASTRORAY code
- ✓ performed automatic C code generation, test case design and execution in Wolfram Mathematica
- ✓ extensive refereeing and judging experience

Exceptional problem solving skills
- ✓ completed 11 scientific projects as a lead
- ✓ recognized by 6 grant awards over 10yrs (e.g. NASA Hubble Postdoctoral Fellowship, NASA ESSF)
- ✓ aced standard tests (e.g. GRE Physics 990/top 5%, GRE General Quantitative 800/top 2%)
- ✓ absolute winner of MIPT Undergrad Physics Olympiad for 4 years in a row
- ✓ a candidate for the International Physics Olympiad
- ✓ received multiple awards in Russian Physics, Math, and Chemistry Olympiads

Communication skills, teaching, coaching
- ✓ written reports (papers) on 15 finished projects, all published in top refereed Astronomy journals
- ✓ oral presentations – 3 university colloquium talks, 3 invited conference talks, 25 conference presentations, 1 press-conference talk, and 3 public talks
- ✓ introduced Mathematica methods into homework for Harvard undergrad course
- ✓ worked as a teaching fellow for Harvard core undergrad, advanced undergrad, and grad courses
- ✓ coached National Russian teams for International Physics Olympiad, successfully implemented innovative teaching method
- ✓ worked in Jury of Russian Physics Olympiads as senior grader supervising a team of graders

Ability to work and multi-task in a dynamic high-energy team environment
- ✓ worked on up to 3 projects simultaneously reporting to different team leads
- ✓ successfully completed projects by self-imposed deadlines

WORK AND EDUCATION

University of Maryland, College Park, MD, USA   2011-2014, July
  Postdoctoral Research Associate, Astronomy

Harvard University, Cambridge, MA, USA   2006-2011
  PhD, Astronomy, 2011; GPA 3.96/4.00, GRE Physics 990, GRE 800Q

Moscow Institute of Physics and Technology (MIPT), Dolgoprudny, Russia   2001-2006
  Master w/ Honors, Applied Mathematics and Physics, 2007; GPA 4.00/4.00
  Computer Science courses: computer architecture; Assembler; Linux; Object-Oriented Programming.