Michael Kupferschmid

Consulting

I will seriously consider offers of employment as a consultant on projects in the categories described below. The Linux computing environment that I use for consulting is secured by a physical firewall.

Optimization Formulation and analysis of optimization models for resource allocation, regression, classification, parameter estimation, transportation and logistics problems, Stackelberg games, and other applications in science, industry, government, and the military. I am familiar with a wide variety of methods for maximizing or minimizing a function of several variables subject to constraints, and for many years I taught courses in the subject. My PhD was awarded for a thesis about numerical optimization, and I have published articles in scientific and engineering journals about optimization algorithms and applications (see the *research publications* tab of this web page). My most recent textbook, *Introduction to Mathematical Programming* (see the *Applied Mathematics* section of this web page) is all about optimization.

Operations Research Linear, nonlinear, integer, and dynamic programming; probabilistic models of queueing and inventory systems; pseudorandom number generation, Monte-Carlo and next-event simulation; engineering economics. I hold an MS in Operations Research and Statistics and my first textbook, now in its third edition, is entitled *Introduction to Operations Research* (see the *Applied Mathematics* section of this web page).

Numerical Computing Selection, design, analysis, implementation, and evaluation of algorithms and data structures for engineering and scientific calculations; user interface design; code profiling and tuning; porting programs across platforms. During 28 years as Scientific Programming Consultant at Rensselaer Polytechnic Institute, my main responsibility was advising graduate students and research faculty on numerical methods. I have taught courses on numerical methods and on the Fast Fourier Transform, maintain a large library of my own scientific subprograms, and have extensive experience using commercial subprogram libraries, sparse matrix techniques, Matlab, and Maple. My scientific research career was devoted largely to the development of tools for the precise measurement of algorithm performance and the comparison of alternative computational methods.

Engineering Analysis, design, testing, and manufacture of analog electronic circuits, power supplies, combinatorial logic, variable-speed DC motor controls, and feedback control systems. I am familiar with military standards and documentation requirements, and I have prepared technical specifications, analog and digital simulations, test procedures,

instruction manuals, patent disclosures, and many technical drawings and reports. Before beginning my career in teaching and research, I accumulated nine years of industrial experience as an engineer. I hold a BS in electrical engineering and an MEng in feedback control systems, and I am a licensed Professional Engineer currently registered in the state of Connecticut.

Technical Writing I have written several successful college textbooks (see the other sections of this web page) and numerous lesser works of technical prose including articles for scientific and engineering journals (see the *research publications* tab of this web page), a series of popular handouts about how to succeed as a college student, instruction manuals, reports, and Unix man pages. I consider myself an expert user of the LaTeX 2_ε typesetting language.