



Job Title: Senior Research Engineer, Fast Bayesian Algorithms

Job Description and Key Responsibilities

Responsibilities will concern the application of Dynamic Bayesian Network models to the automatic segmentation and transcription of musical audio signals and recognition of musical performance gestures in close collaboration with an expert in these fields. We are particularly interested in candidates with expertise in: 1) fast parallel algorithms and approximation techniques for particle filtering and smoothing for dynamic probabilistic models involving mixed continuous/discrete state spaces (including, but not limited to, Rao-Blackwellized approaches); and 2) efficient computational approaches for identification of continuous-time Markov models using nonuniformly sampled data.

This position involves scalable, cross-platform C++ development and research. You must be familiar with code optimization for a variety of processor architectures, with a particular focus on massively parallel and/or cluster computing architectures. Duties will be initially weighted towards assisting the modeling expert with specific implementation and optimization tasks, and will eventually become more balanced towards developing general-purpose software toolkits.

Thrive in a fun, fast-paced, and informal working environment? To this end you should be highly self-directed, yet capable of forming close collaborative working relationships. Excellent oral and written communication skills are a must.

Required Qualifications

- Extensive research background in Bayesian signal processing; familiarity with dynamic probabilistic models; sequential Monte Carlo; variational methods; EM.
- Strong record of innovation in fast algorithms and approximation methods for Bayesian signal processing, with an emphasis on parallel algorithms.
- Familiarity with continuous-time Markov models; identifying such models from non-uniformly sampled data.
- Familiarity with sparse computation.
- Excellent C++ coding skills for cross-platform development, including intimate knowledge about exploiting unique characteristics of contemporary microprocessor and DSP architectures.
- Experience with multithreaded and parallel C++ development, working familiarity with MATLAB.
- Demonstrated outstanding ability to perform innovative and significant research in the form of technical papers, theses, or patents.

Desired Qualifications

- Interest in musical audio signal processing; ability to play an instrument.
- Experience developing general purpose toolkits and APIs.

Education Requirements

Ph.D. in Computer Science, Electrical Engineering, or a closely-related field.

This is a full-time position. Zenph has offices in Research Triangle Park, North Carolina and the Denver, Colorado area. Excellent pay, stock options, and competitive benefits.

Interested? Contact us at ZenphJobs@zenph.com or 919-899-9284.