JOB: Mathematician (contractor/consultant)

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Job Description

Title: Mathematician (Consultant/Contractor)

GFT Group seeks a highly creative individual with solid skills and experience in advanced mathematics for a speech recognition project. The project will develop new concepts and advanced mathematics that substantially improve the accuracy of current speech recognition technology. This is a challenging project that requires unusual skills. It involves a close integration of advanced theory and practice not found in most commercial algorithm projects and academic research projects. The project offers the opportunity to perform fundamental scientific research with substantial immediate practical benefits and applications.

GFT Group is developing a new speech recognition engine with superior accuracy compared to current speech recognition engines such as Dragon Naturally Speaking, ViaVoice, Microsoft Speech, and the open−source SPHINX speech recognition engine. The engine should enable or enhance rapid jumping to targets such as files, web sites, PowerPoint slides, submenu selections and so forth on computers by simple voice command, dictation of documents, and hands−free operation of computers, cell−phones, automobile accessories and many other devices. Our target is to achieve 100% accurate speaker−independent phoneme recognition in the presence of typical background sounds such as car noises that do not impair human speech recognition. We do not expect to solve the homonym resolution problem for general unstructured human speech. The effective speech recognition accuracy, the word error rate, of the engine will be determined by the frequency of homonyms and near−homonyms, words and phrases that sometimes sound the same, in the recognized speech.

The Mathematician will help translate advanced concepts in human speech to specific mathematical formulas that can be tested on human speech data and, if successful, converted quickly to software for a real−time commercial speech recognition engine written in a portable compiled language such as ANSI C. The engine will include a Microsoft Speech compatible wrapper.

The task is similar to the inference of mathematical formulas such as differential equations from experimental data and from concepts expressed in words, pictures, and rough mathematical formulas. It may resemble, for example, the translation of Michael Faraday's ideas about electricity and magnetism from the words and pictures that Faraday used to a set of new differential equations by James Clerk Maxwell. Experience with this process is most valuable for this position but is not a requirement.