



## Technology 089: Physicians Assistant Artificial Intelligence System (PAIRS)

PAIRS is an artificial intelligence (AI) software system that helps automate the diagnosis of diseases in human patients. Users of the technology seek to improve the accuracy of patient diagnosis and treatment. With this technology, medical technicians and emergency care workers are able to identify over 1700 diseases.

The system provides a number of features including:

- Advanced and sophisticated AI.
- Natural Language Processing (NLP) - NLP has the ability to understand acronyms, synonyms and antonyms.
- Suggests diagnostic procedures for the possible diagnosis.
- 120,000 disease-feature links covering about 1700 diseases.
- Over 400,000 feature-feature links.
- 547 internal medicine diseases and their 75,000 disease-feature links are used in AI method.
- Option to test different diseases of a possible diagnosis for given patient data.
- Attached 2.5 million online links to National Library of Medicine abstracts.

### Cost

The system does not allow the end user to easily jump around in asking questions. This technique, called “reflexive questioning” is a key requirement with medical diagnostic software. We recommend porting the application to a cell phone platform, making it easily available for triage and emergency support. We recommend a detailed physician review of the technology for certification and approval. We recommend the system design include a link to forward information to an outside party, such as a physician. Our estimation is these changes will cost up to \$500K, however, we have not scoped the project.

### Development Status

To date, no formal testing has been completed on the accuracy of the system in diagnosis. A small group of practitioners have used it and provided favorable feedback.

### IP Status

The inventors have not applied for any patents, copyrights, or trademarks at this time. A cursory patent search found several instances of software methods that automate patient diagnosis. No open source tools have been used in the development of the system besides a java user interface editor, so few issues are expected with open source licensing.

### Partner Opportunities

We are currently in very preliminary discussions with Project Hope on this technology. We believe the use of mobile devices in triage situations will increase over time. The market will expand further with the addition of Bluetooth devices used to provide medical readings which can be transmitted as part of the session.

### Innovator

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