Artificial Intelligence in Interventional Cardiology

Student Researcher: Aaron Hummer

Faculty Advisor: Dr. Elaine Halesey, Ed.D, R.T.(R)(QM)(ARRT)

**Abstract**

This research project explains the fundamentals of artificial intelligence (AI) and the ways that AI can be useful in interventional cardiology (IC), particularly in cardiac catheterization. In cardiac catheterization, intravascular ultrasound (IVUS) and optical coherence tomography (OCT) are two imaging devices that are used in interventional procedures, such as percutaneous coronary interventions (PCI). While still early in the research phase, OCT combined with AI shows the most promising results for the future of IC. Presently, IVUS maintains the highest results during interventional procedures, but as more randomized, multicenter studies are performed using OCT, the paradigm shift that will occur in IC represents where the cardiology profession is headed in the future. Due to the number of advancements being researched in the use of OCT and AI, the application of this imaging device may happen sooner into departments than initially expected. Numerous studies being performed in Asia and Europe offer the most insight as to what the future may hold for this field. As with any novel technology, disappointment and disillusionment are bound to occur because of the unrealistic expectations that may be associated with this technology. While this technology might be new and exciting, the focus on improving and maintaining clinical outcomes during interventional procedures should be a current concern of the field of cardiology.

*Keywords*: artificial intelligence, optical coherence tomography, intravascular ultrasound, interventional cardiology