



# Optical and Electromagnetic Tracking Fusion for guiding medical imaging probe

Project Management and Software Development for Medical Applications

## General Info

Project Title: Optical and Electromagnetic Tracking Fusion for guiding medical imaging probe

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optical tracking data with magnetic tracking data in order to fuse information from two different tracking sources. This is very good opportunity to learn two kinds of important tracking systems and related software development for medical application.

## Project Abstract

Tracking the devices during various medical interventions is often needed. Optical tracking has high accuracy in tracking medical devices however fails in case of loss of line of sight. This issue can be solved by electromagnetic tracking system but it suffers from interference issues. Hence this project aims to combine these two systems to provide better tracking accuracy during medical application.

## Technical Prerequisites

C++ programming and scripting language experience, basic understanding of networking protocols and computer vision concepts

## Background and Motivation

This project is part of large scale EU projects [EndoTOFPET-US](#) and [PicoSEC](#) where tracking and navigation of endoscopic PET is very crucial task. The project has high clinical value in providing novel diagnostic and therapeutic imaging tool.

## Administrative Info

Working Time: 150 hours over the semester

Project Location: IFL, Klinikum rechts der Isar and CAMP chair, Garching

Required Equipment: NDI optical and Electromagnetic tracking system, work station all set up.

## Student's Tasks Description

Work within custom made C++ based software framework called CAMPCOM to synchronize

## Timeline and Milestones

The timeline and milestones are closely connected to the outline of the lecture. Therefore, kick-off, midterm and final presentations are required. Further details and milestones will be set to fit the student's skills.

Please send the completed document to us ([Ralf.stauder@tum.de](mailto:Ralf.stauder@tum.de)) before the project proposal deadline, April 8<sup>th</sup>. Please note that this proposal will be evaluated by the BMC coordinators and will be assigned to a student only in the case of acceptance.