工学系研究科専攻間横断型教育プログラム
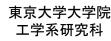「機械システム・イノベーション」

実践型リーダー養成事業「イノベーションリーダー養成演習」

博士課程教育リーディングプログラム
「社会構想マネジメントを先導する グローバルリーダー養成プログラム」

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東京大学
THE UNIVERSITY OF TOKYO

東京大学大学院
工学系研究科

第150回GMSI公開セミナー／第59回実践リーダーレクチャー／第8回GSDMプラットフォームセミナー

Medical Image Computing and Therapeutic Procedures
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 The use of medical images in the context of therapeutic procedures is on the rise. Pre-procedural images are used both for planning and for intra-procedural guidance. In addition, we see an increasing use of intra-procedural imaging, most commonly US, X-ray and endoscopy, but increasingly including CT and even MR. Use of MIC technologies on intra-procedural images raises many interesting boundary conditions:
typically there are only limited computational resources accessible and only a few seconds or minutes available to perform the computing. On the other hand not everything needs to be automated and the demands for precision vary. Translation of technology in our field is fairly slow.
Because of this, many more MIC technologies have yet to make the translation from the laboratory into clinical practice.

The MIC community has spent relatively little effort in exploring this very promising constraint space. Accordingly, there is a rich potential for new research topics. Another area with need for innovation is on the level of software systems for integration and workflow support.
Full-fledged platforms are needed as a start point for this type of research. The traditional approach to research in MIC is that a graduate student is given images from one example case and creates a platform from scratch to enable their research on that data. This approach limits the capabilities and robustness of such research platforms. It is increasingly necessary to change the way problems are approached in order to make progress in the context of actual procedures.

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