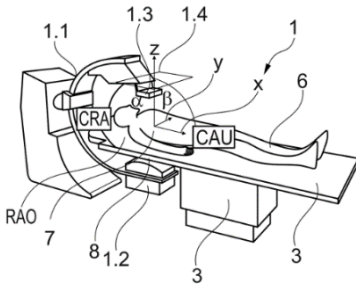


Procedure for orienting X-ray units

Automated adjustment for optimum standard projection in X-ray procedures



C-arm X-ray system



Principle diagram

Invention

Imaging X-ray examination procedures often require a great deal of time and human resources, since creating images oriented in the standard manner requires adjustment to the optimum X-ray tube angle. This increases X-ray exposure for patients and personnel, especially during angiographic and other radioscopic procedures. A new technology from Heinrich Heine University in Düsseldorf can help here by automating adjustment. A single radioscopic image of the part of the body to be adjusted to is used to localize distinctive structures so that conventional image processing and artificial intelligence can be used to automatically determine the optimum projection angle. The procedure features a high degree of automation and efficiency in terms of costs and personnel and has the potential to greatly reduce radiation exposure during angiography and radioscopic procedures.

Commercial Opportunities

The invention can be used in all fluoroscopic examinations (radioscopy) and interventions. That includes diagnostic and interventional angiography (catheter-assisted vascular imaging or intervention) in all parts of the body (neuroradiology, radiology, cardiology, angiology, vascular surgery, and others). Fluoroscopy-controlled interventions in or on the bone (such as sampling through the vertebral body pedicle or by means of vertebroplasty, kyphoplasty, periradicular therapy, or joint infiltration) can benefit from automated, standardized projections. X-ray unit manufacturers can also use this invention to adapt their own products.

Current status

A proof of principle and initial test data sets are available. They indicate that general functionality is to be expected. The technology has been registered with the German Patent and Trade Mark Office. Other national patents can be applied for in the priority year. There can also be a planned PCT application.

On behalf of Heinrich Heine University, we are offering interested companies the opportunity to license this technology and jointly refine it with the inventors at the University in Düsseldorf.

Relevant publications

Planned for May 8, 2024 at the RÖKO X-ray conference in Wiesbaden, Germany: "Deep-Learning-basierte Einstellung von Standardprojektionen in der zerebralen Angiographie" by Christian Rubbert, Pascal Braband, Martha Natalia Krakowski, and Julian Caspers.

An invention from Heinrich Heine University in Düsseldorf.

Competitive Advantages

- High automation
- Less X-ray exposure
- Time-saving
- Affordable

Technology Readiness Level

1 2 3 4 5 6 7 8 9

Technology concept formulated

Industries

- X-ray unit manufacturers
- Medical technology software companies

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