

New clinical evidence links AI-supported image analysis for long leg radiographs (LLR) to human-reader grade accuracy

Study confirms that AI is on par with expert readers: IB Labs' LAMA assesses fully automatically LRRs as accurate as experts while being three times faster.

CHICAGO, ILLINOIS, UNITED STATES, November 27, 2021 / EINPresswire.com/ -- The mechanical alignment of the knee is an important factor in planning for, and subsequently assessing the success of a knee replacement. It is most commonly measured using a long-leg



IB Lab LAMA integration

anteroposterior radiograph (LLR) encompassing the hip, knee and ankle. This procedure is timeconsuming and difficult to reproduce. Currently, radiologists and orthopedic surgeons perform these measurements manually with standard rulers or digital calipers. Subjective landmark

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LAMA can handle more cases with greater efficiency and can reliably take care of tedious and repetitive tasks; therefore, radiologists & surgeons can manage their time and workloads more efficiently."

Jochen Hofstaetter, MD, Professor Orthopedic Surgery setting leads to high intra- and inter-observer variability, a lack of reproducibility, and length measurement calibration errors. Object based calibration methods produce errors in length measurements of up to 17.4%. Moreover, precision and accuracy of measurements depend on the experience of the observers. Al-based software could enable highquality outputs delivered with reduced resource utilization. As of this, the American College of Radiology Data Science Institute (DSI) has specifically identified leg length discrepancy measurement in radiographs as an Al use case for improving medical care.

A newly published study using a novel AI-supported

software (ImageBiopsy Lab - IB Lab LAMA) addresses this clinical challenge: <u>the cross-sectional</u> <u>diagnostic study</u> "Fully automated deep learning for knee alignment assessment in lower extremity radiographs" by Sebastian Simon, Gilbert M. Schwarz, Jochen G. Hofstaetter, and others, published in the November 2021 issue of Skeletal Radiology journal, demonstrates the power of such a diagnostic support software when it comes to humanreader accuracy and efficiency gains.

In summary, the study concludes that:

Extensive training data of over 15,000 LLRs from sites in Europe (Austria, Netherlands) as well as the US (multi-sites) with a separated validation population of 284 patients was used to build the AI software;

Al-supported measurements result in repeatable, reliable readings that allow for standardization of results across different readers and sites;

The AI software ensures significant time savings: image throughput is more than three times higher compared to manual reading workflows;

The software runs automatically in the background and can therefore be executed asynchronously, giving observers more free capacity for their workflow;



As the volume of imaging increases, so does the time and effort needed for the reading and reporting of findings. AI-based software has the potential to produce high-quality outcomes while using fewer resources. That is where ImageBiopsy Lab steps in. With IB Lab LAMA, the Vienna-based company has developed AI-based software that analyzes musculoskeletal (MSK) imaging data more precisely in real-time with every X-ray image enhanced and secured by a fully automatic measurement and action recommendation.

IB Lab LAMA is one of four MSK modules that provide diagnostic support for the most common bone and joint diseases in medical practices and clinics. The application was developed for MSKradiologists and orthopedic surgeons, providing up to twelve measurements on long-leg X-rays with or without hip or knee implants. IB Lab LAMA automatically locates the anatomical features of the femur, tibia, and calibration ball to provide all the landmarks needed for the required measurements. If a calibration ball is available, IB Lab LAMA uses a corresponding magnification factor for the length measurement.

At RSNA 2021, ImageBiopsy Lab will present the latest software release LAMA V1.04 which will be even more powerful with flexible output reportings, improved stability and landmark detection. LAMA V1.04 has been extensively trained on further 28,000 LLRs including images with and without implants as well as various image artifacts. Detailed error reports support the radiological workflow by alerting the reader when an AI-supported analysis was not successfully completed. For more details visit us at RSNA 2021 (booth 4348/AI section) or <u>sign up for a demo</u>. Tatiana Sorokina ImageBiopsy Lab +43 1 9051206000 marketing@imagebiopsy.com Visit us on social media: LinkedIn Facebook Twitter Other

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