Jakub Krzysztof GRABSKI[1]

[1] *Institute of Applied Mechanics, Poznan University of Technology, Jana Pawła II 24, 60-965 Poznań, Poland*

HAND LANDMARKS DETECTION IN X-RAY IMAGES USING YOLO NETWORK

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The hand X-ray images of children are typically used for bone age assessment. Bone age is related to the stage of bones development, while chronological age is determined by the date of birth. The differences between them may indicate growth or endocrine abnormalities. Children's skeletal maturity, or bone age, can be determined by analyzing their carpals, metacarpals, or phalanges. The preprocessing steps in digital X-ray image processing for bone age assessment can consist of the localization of some specific areas of points. Firstly, the hand region in the image should be localized. Secondly, some landmarks related to specific hand bones and joints are localized in the image. In this research, both tasks related to localization of the hand region and hand landmarks are realized using YOLOv4 network. YOLO convolutional neural networks are commonly utilized to localization or segmentations tasks in the literature. The results of the current study show very good accuracy.