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Constantino Carlos Reyes-Aldasoro* (reyes@city.ac.uk), Northampton Square, London, EC1V 0HB, United Kingdom, and **Cefa Karabag** and **Martin L Jones**. *Semantic Segmentation of Cancerous Cells observed with Electron Microscopy: An Objective Comparison between one Image Processing Algorithm and Four Deep-Learning Architectures.*

In recent years, advances on computational techniques, have provided excellent results in many tasks, in some cases outperforming human levels. Those techniques are sometimes categorised as Artificial Intelligence or Deep Learning with Convolutional Neural Networks being very popular. In this presentation I will explore the objective quantitative comparison between four deep learning models (VGG16, ResNet18, Inception-ResNet-v2, and U-Net) and one traditional image processing algorithm as applied in a particular biomedicine task, namely, the semantic segmentation of cancerous cells as observed with electron microscopy. The segmentations were compared by measuring pixel-based segmentation accuracy and Jaccard index against a labelled ground truth. The results indicated a superior performance of the traditional algorithm (Accuracy = 0.99, Jaccard = 0.93) over the deep learning architectures: VGG16 (0.93, 0.90), ResNet18 (0.94, 0.88), Inception-ResNet-v2 (0.94, 0.89), and U-Net (0.92, 0.56). (Received September 02, 2020)