Deep Learning with minimum coding and free hardware

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The current work is proposing a very simple and fast python script to classify polyps in colonoscopy images using Fastai deep learning. This work is the optimized version of the previous tool: GitHub repository **CNN4Polyps** about colonoscopy polyp detection (classification + localization into an image) with convolutional neural network - CNNs (https://github.com/muntisa/Colonoscopy-polyps-detection-with-CNNs) using *Keras*. I demonstrated that simple CNNs or *VGG16* transfer learning could be used with a GPU to create good classifiers able to detect a polyp in colonoscopy images.

Jeremy Howard and the team are proposing a faster python package for deep learning models as a free course at *Fast.ai* (https://course.fast.ai/). Google Colab free virtual computers (https://colab.research.google.com) with GPU support was used to run all the calculations.

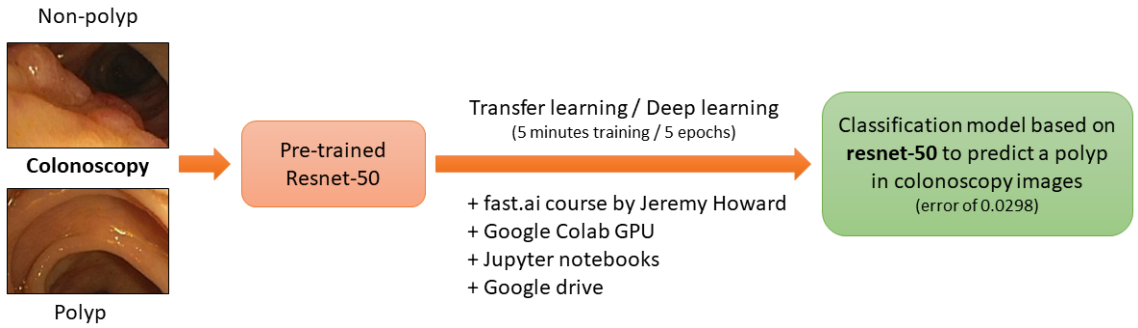

Figure 1. Methodology flowchart for colon polyp classification with fastai.

The current dataset was generated with the previous project *CNN4Polyps* starting from a public dataset: **910** images for training and **302** images for validation. All the models were saved in the project folder.

The current script (**Figure 1**) demonstrated the ability to create a very accurate classifier for medical imaging with an accuracy of **0.99** using **resnet50** transfer learning fine tuning, only 5-10 lines of code, free GPU hardware (Nvidia K80), and free fastai package (based on PyTorch library). The scripts to train the model or to make predictions are available at https://github.com/muntisa/Fastai-Colon-Polyps.

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