Understanding DL Architectures for Image Segmentation

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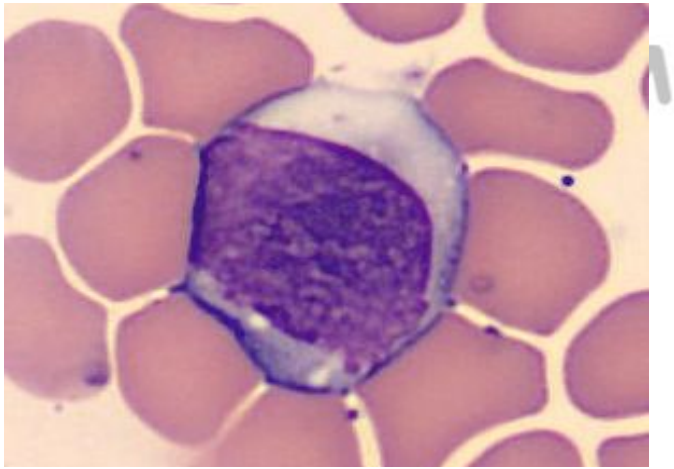
Approach to solve Blood Cell Segmentation



Advanced
Deep Learning

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Understanding DL Architectures for Image Segmentation

- UNet Family
- DeepLab Family
- R-CNN Family

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Key Contributions of R-CNN Family

- Builds upon Faster R-CNN architecture, but we apply Segmentation mask along with Classification and Box Regression

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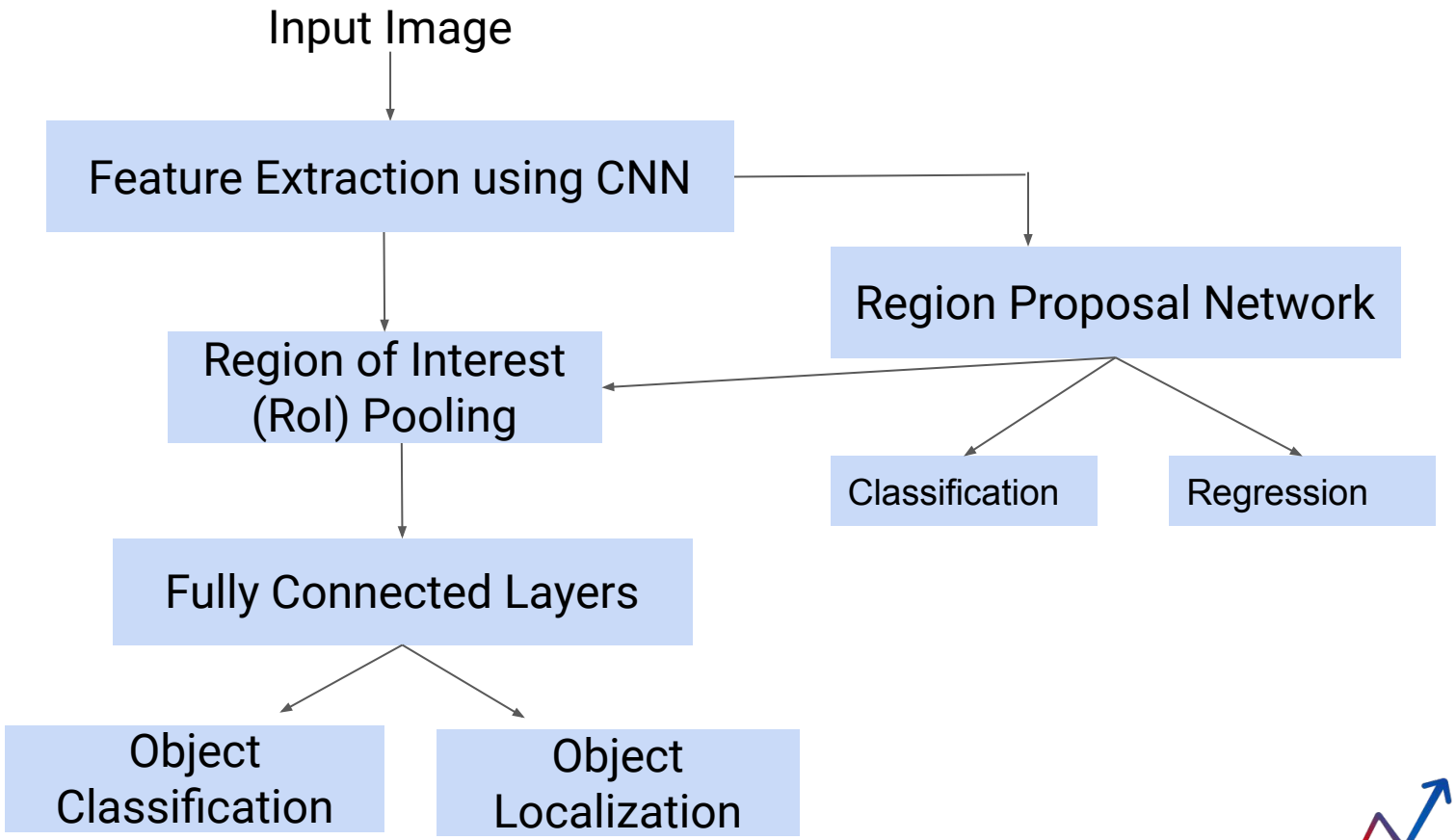
Recap: Faster R-CNN



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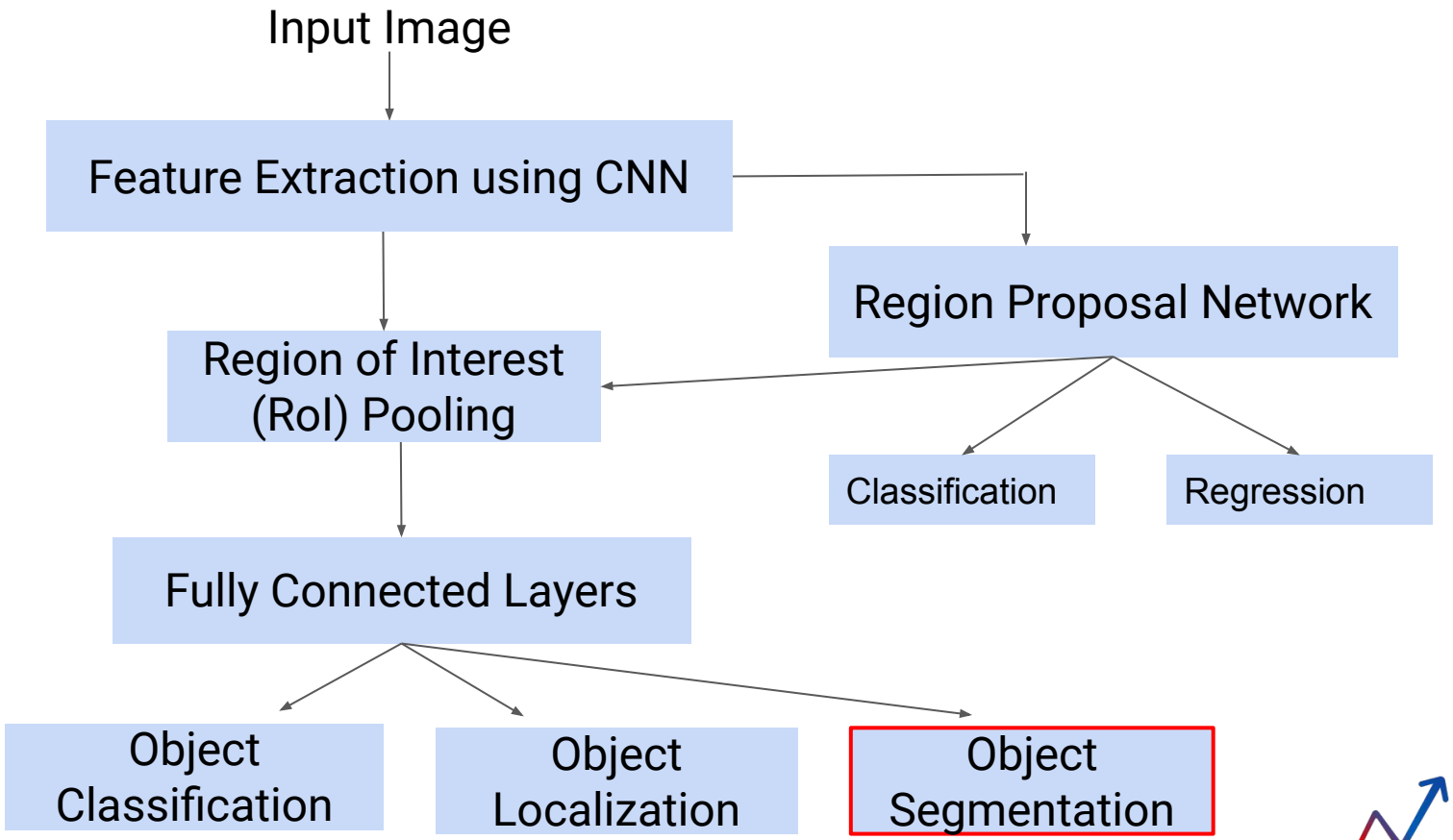
Mask R-CNN



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Key Contributions of R-CNN Family

- Builds upon Faster R-CNN architecture, but we apply Segmentation mask along with Classification and Box Regression

- Multi-task training for Image Segmentation

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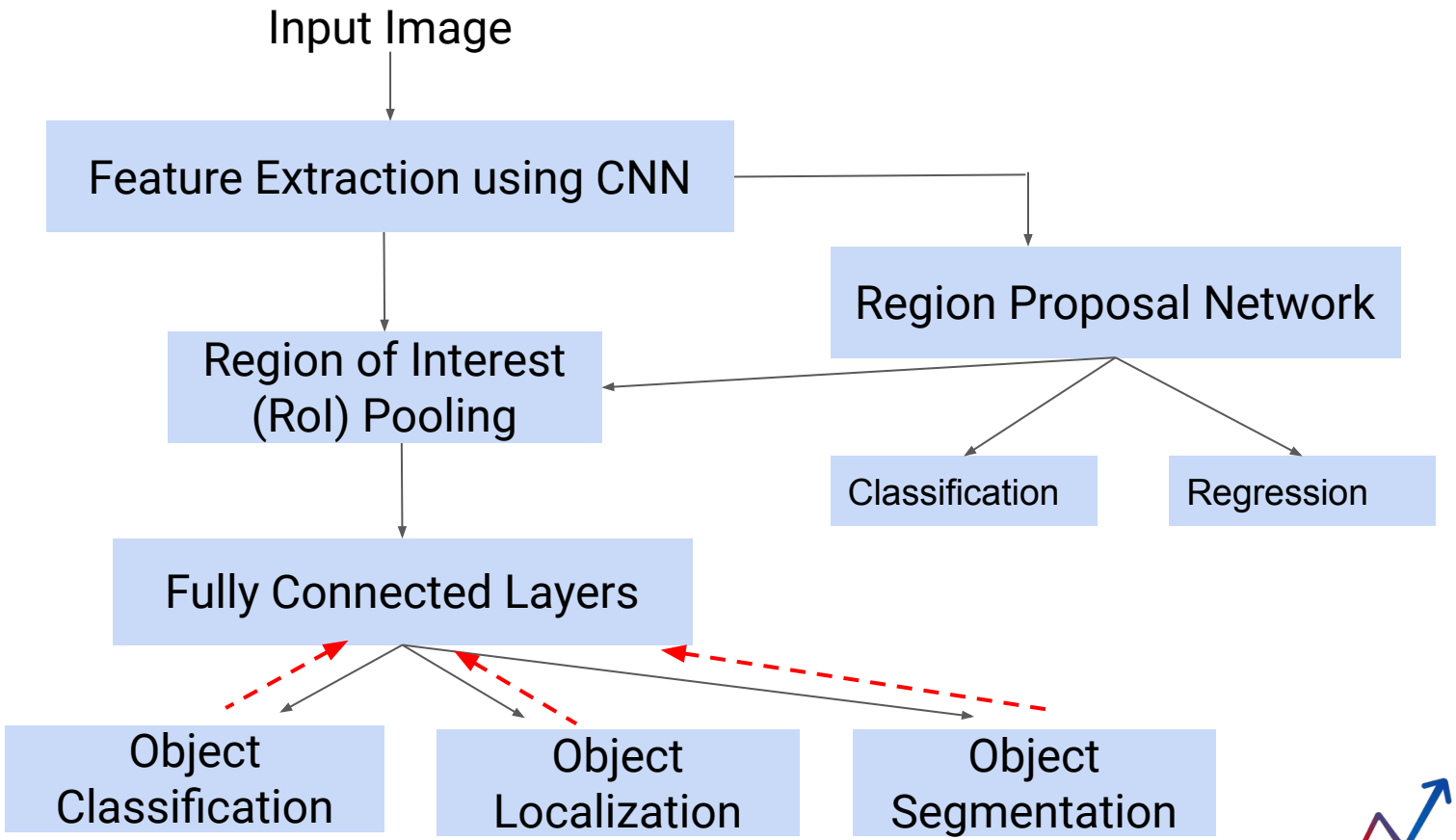
Mask R-CNN



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Key Contributions of R-CNN Family

- Builds upon Faster R-CNN architecture, but we apply Segmentation mask along with Classification and Box Regression

- Multi-task training for Image Segmentation

- Feature extraction using either pretrained models like Resnet or Feature Pyramid Networks

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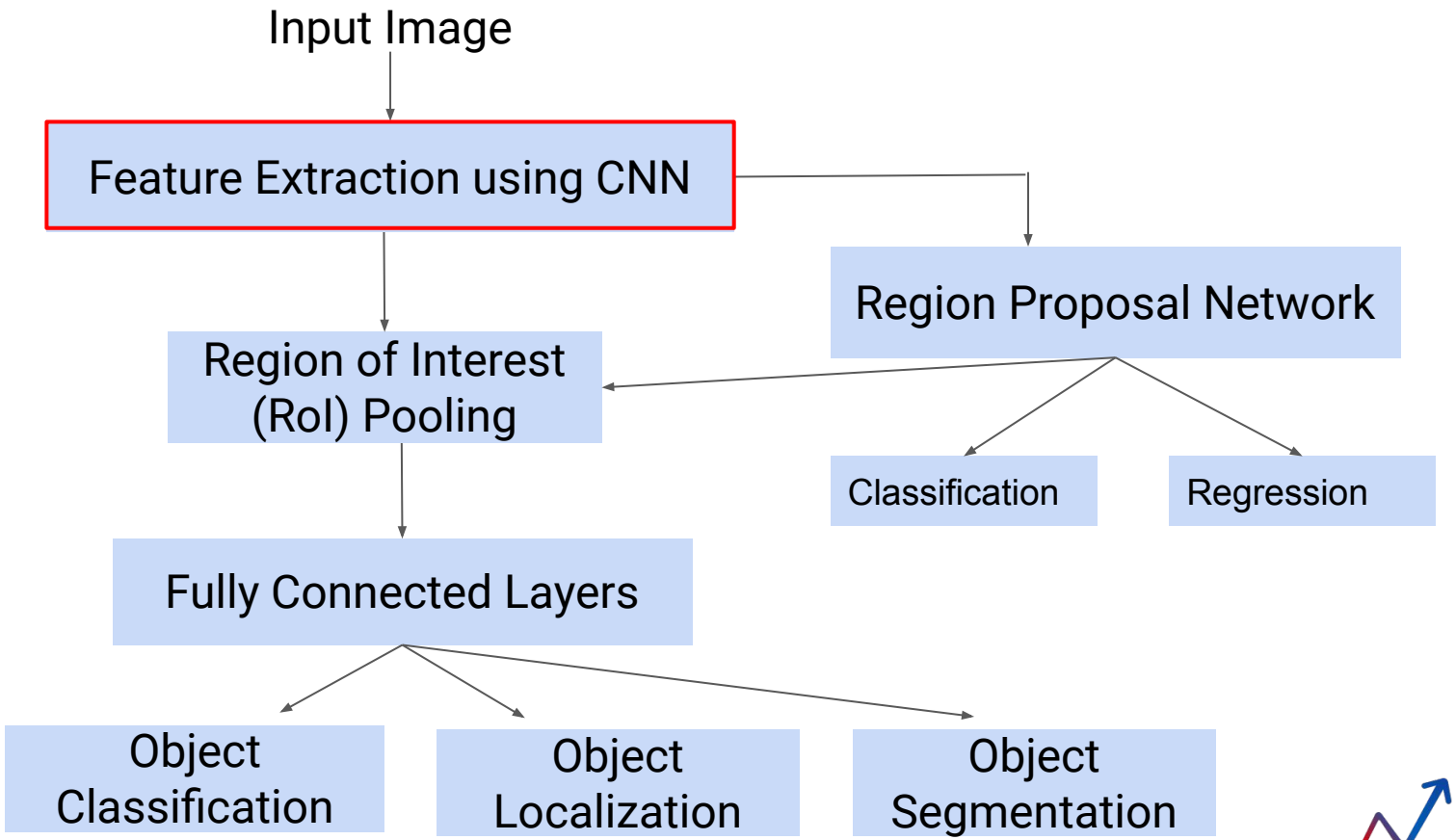
Mask R-CNN



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Key Contributions of R-CNN Family

Semantic Segmentation

Instance Segmentation

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Steps for Image Segmentation using Mask R-CNN model

1. Data Loading and Preprocessing

1.1 Load the Data

1.2 Define custom dataset and dataloader

1.3 Data Exploration

2. Image Segmentation through Mask R-CNN model

2.1 Define model architecture

2.2 Train the model

2.3 Calculate IoU score

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Code Walkthrough of Mask R-CNN

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