) bjet Petection find what objects are in air image boarday boxes 1. R-CNN - legion Based CNN Fask R-CNN 3. Faster R-CAN 1. R-CNH Input Image to Not a trainable Selective Search generate ~ 2000 region progosals where object might be 2014 2000 region D gre troined - Noda Ronze T [Vag net] 4096 4096 4096 4096 x, y, w, h 2000 times per l'mage CMM runs Not end-end trainable Prob: First successful deep learning object detector Cons: Very slow, Not end end trainable, Needs Lot of disk space

2. Fast - RCNN Input Lee CNN Vages Feature Map Schecking Search Region of Interest Ir Fixed Nize featon Rol pooling Fully lonnet lays Boundary box regressed

faster then RCNN End-end fraining (excluding Selective Search) Still depends on slow selective Seasch Not fully a red e time Image Dug NN VAN Feature May Kegion Proposal Network Stide the window through the Image and predick it is an object or Not, if there is an object timete a Anchor box outh Variging size and aspect Region prosal

Tel pooling Fully Connected layer Objet Classification + Box Regression 2' High & curry 3. Faster than Old wideli (Red fine atment 7. Not realtime on mobile 2. Comple Architecture

Summary Region Proposel method Accuracy End-End? Additional
Ligh NO runs per Image Speed very slow Scheetve Search R-CNN Botter Partially koi goding + Seteline search medium Sclective Search FADE RCNN Smoot Legion proposal Anchor box very high Yes Faster Region Proposal

Paster RCNN

Netwood K