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WP4: Automatized classification of CDW for robotic separation

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CDW RECOGNITION | Image acquisition

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CDW RECOGNITION | Materials (classes)

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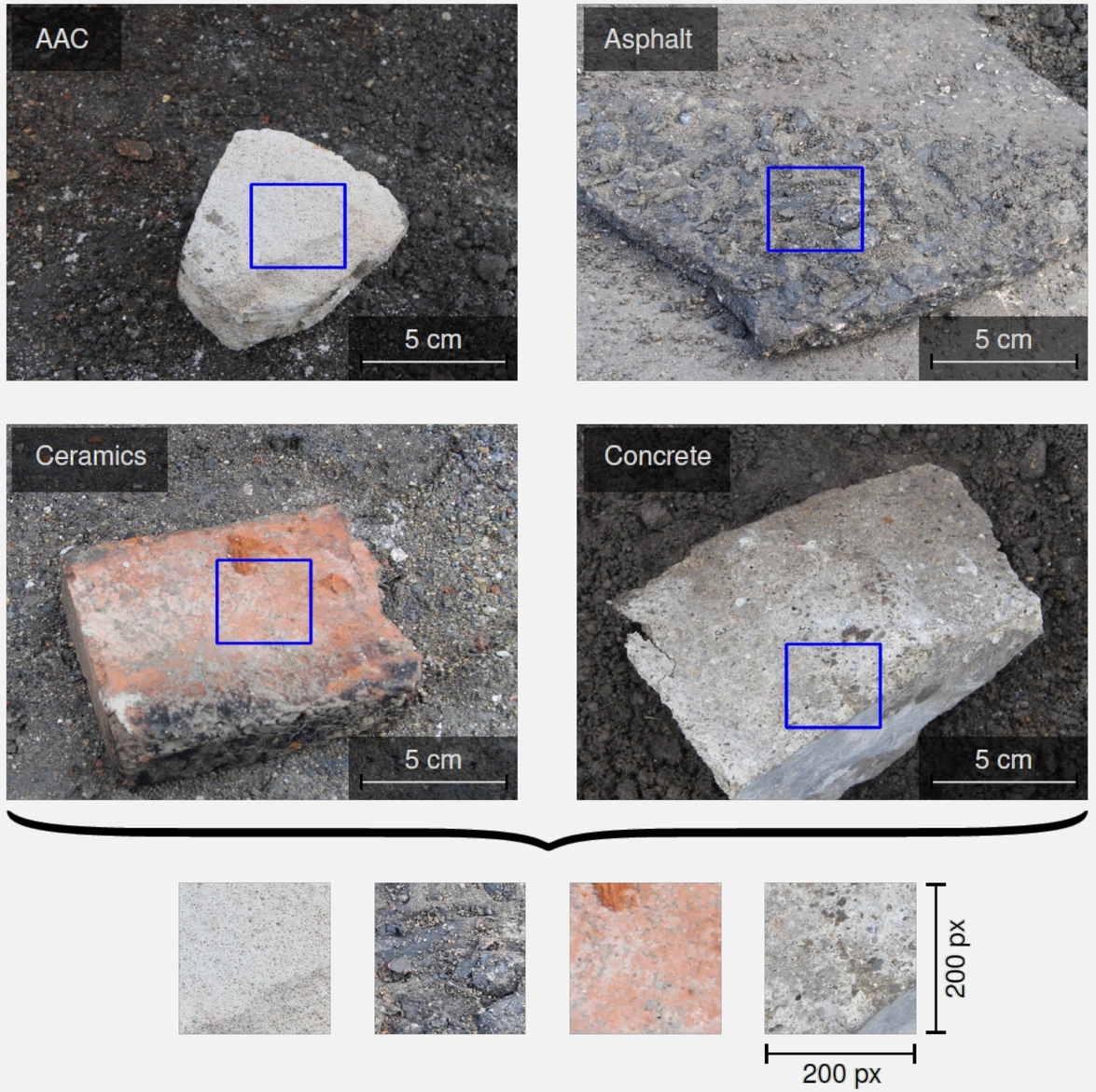
CDW RECOGNITION | Extraction of subsets



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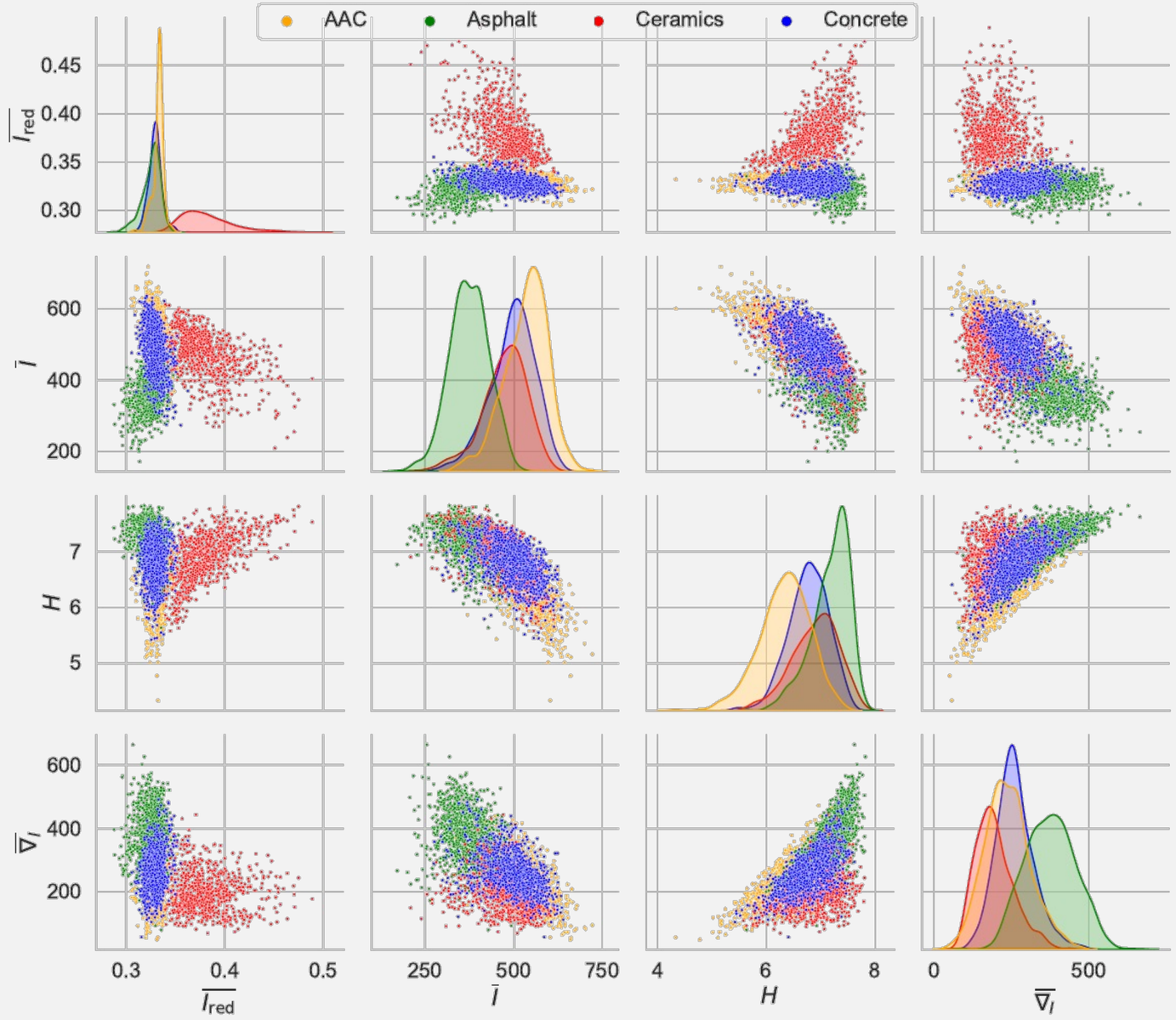
CDW RECOGNITION | Correlations between texture characteristics (features)



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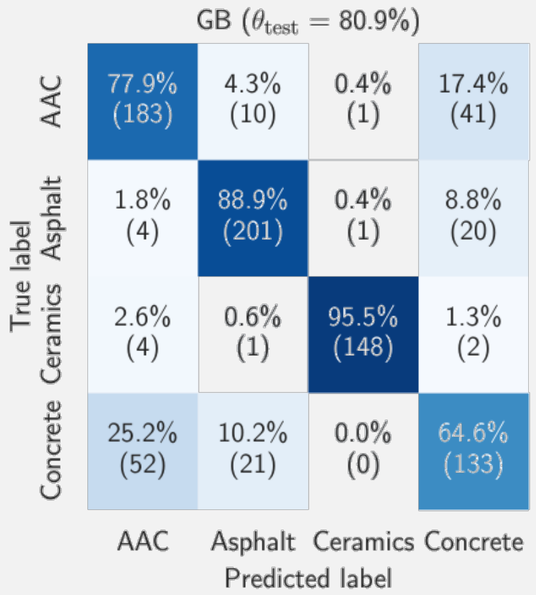
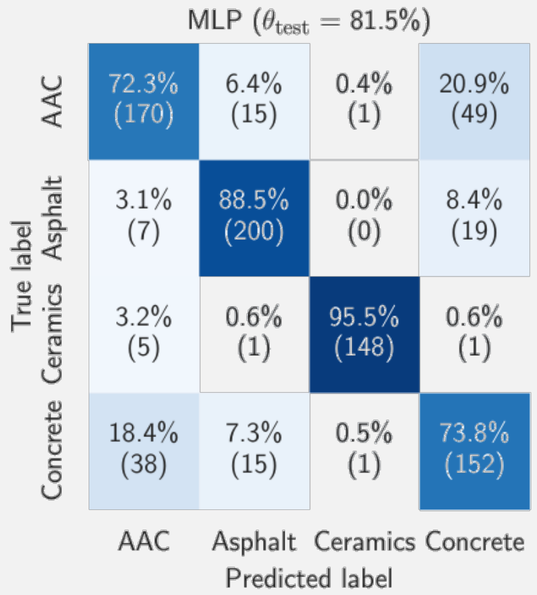
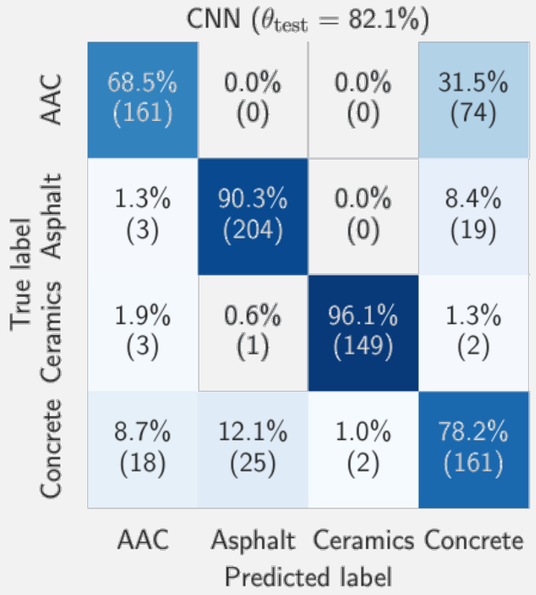
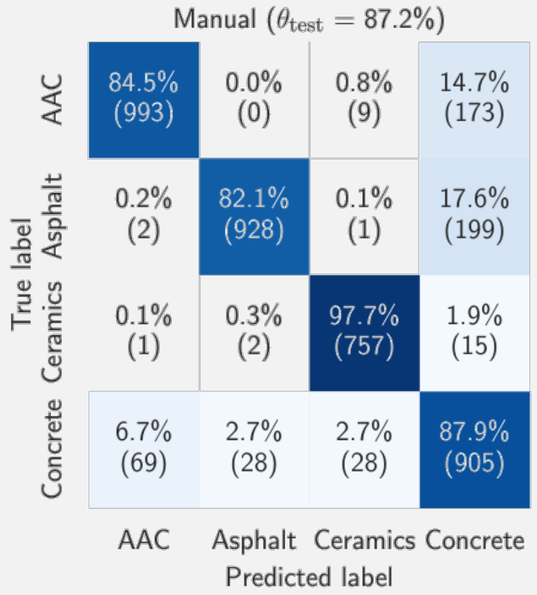
CDW RECOGNITION | Confusion matrices









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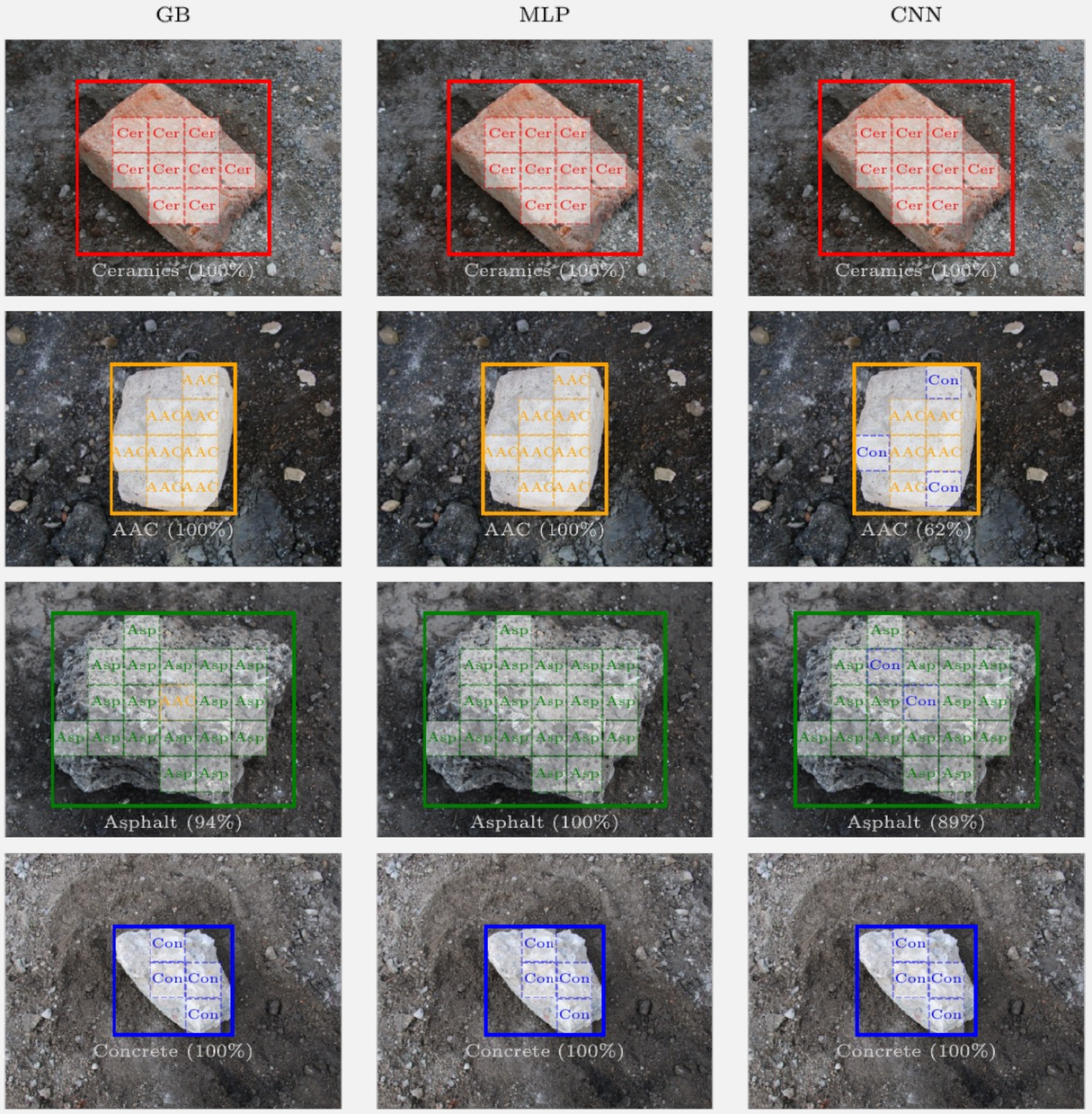
CDW RECOGNITION | Localization and recognition



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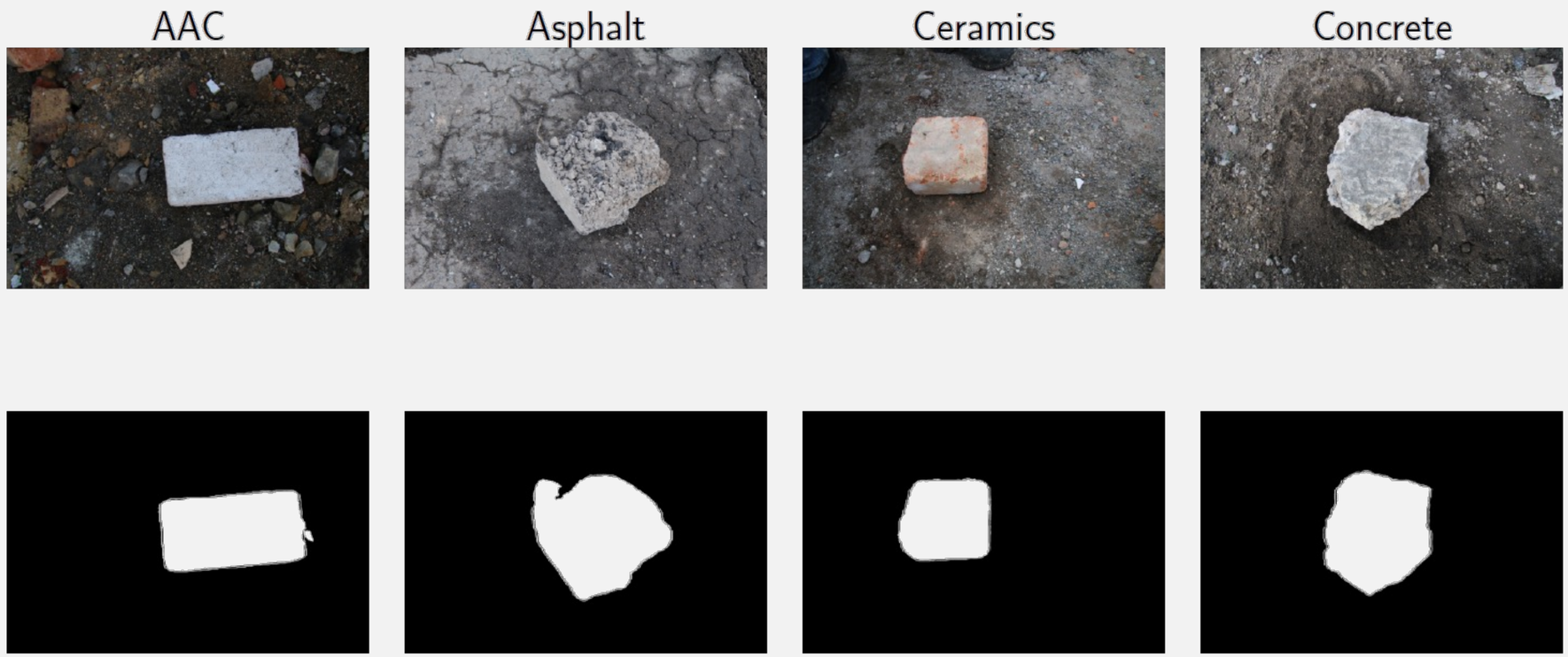
CDW RECOGNITION | Segmentation (more fragments at a time) – ground truth masks



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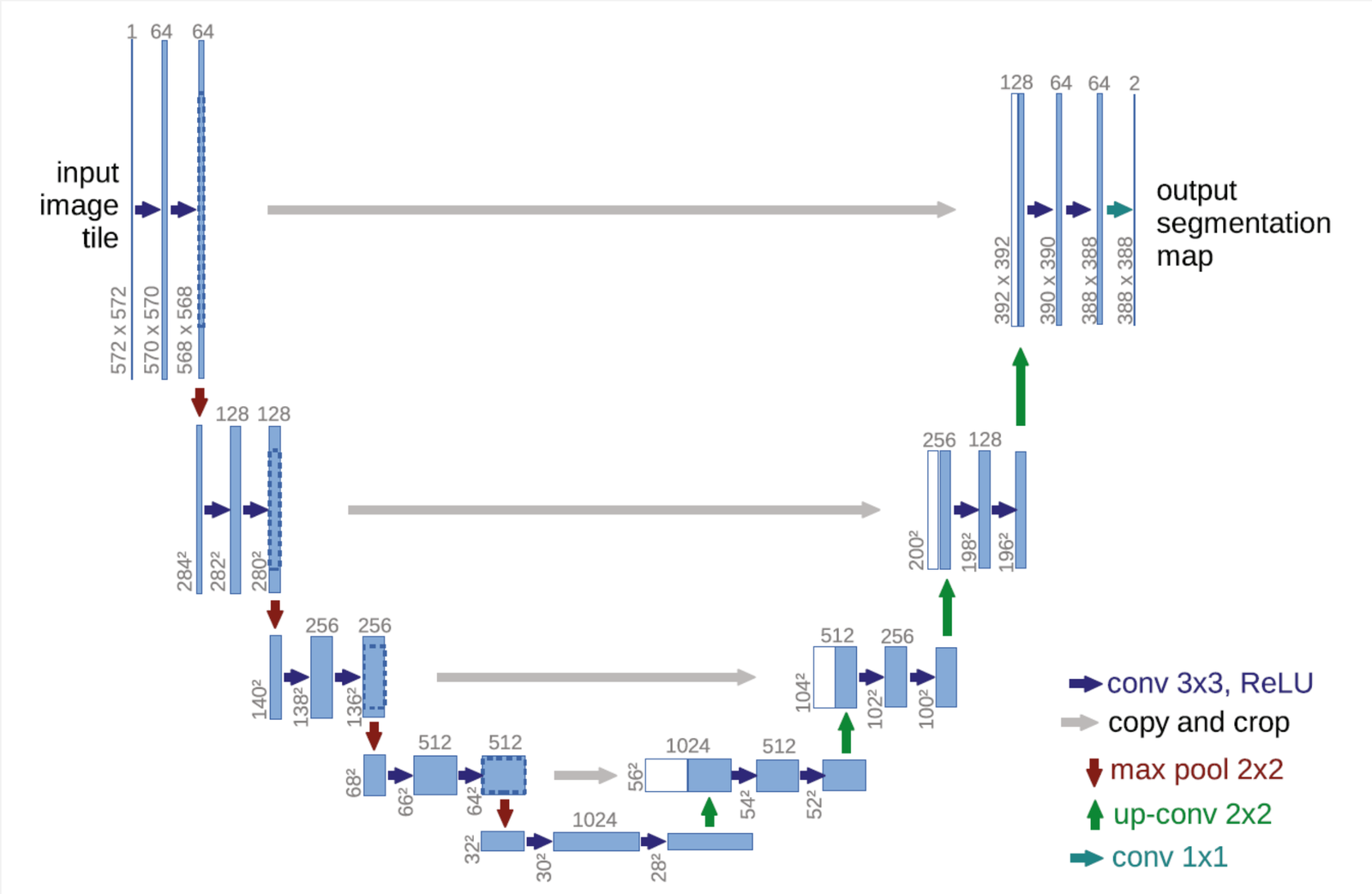
CDW RECOGNITION | Segmentation (more fragments at a time) – U-Net



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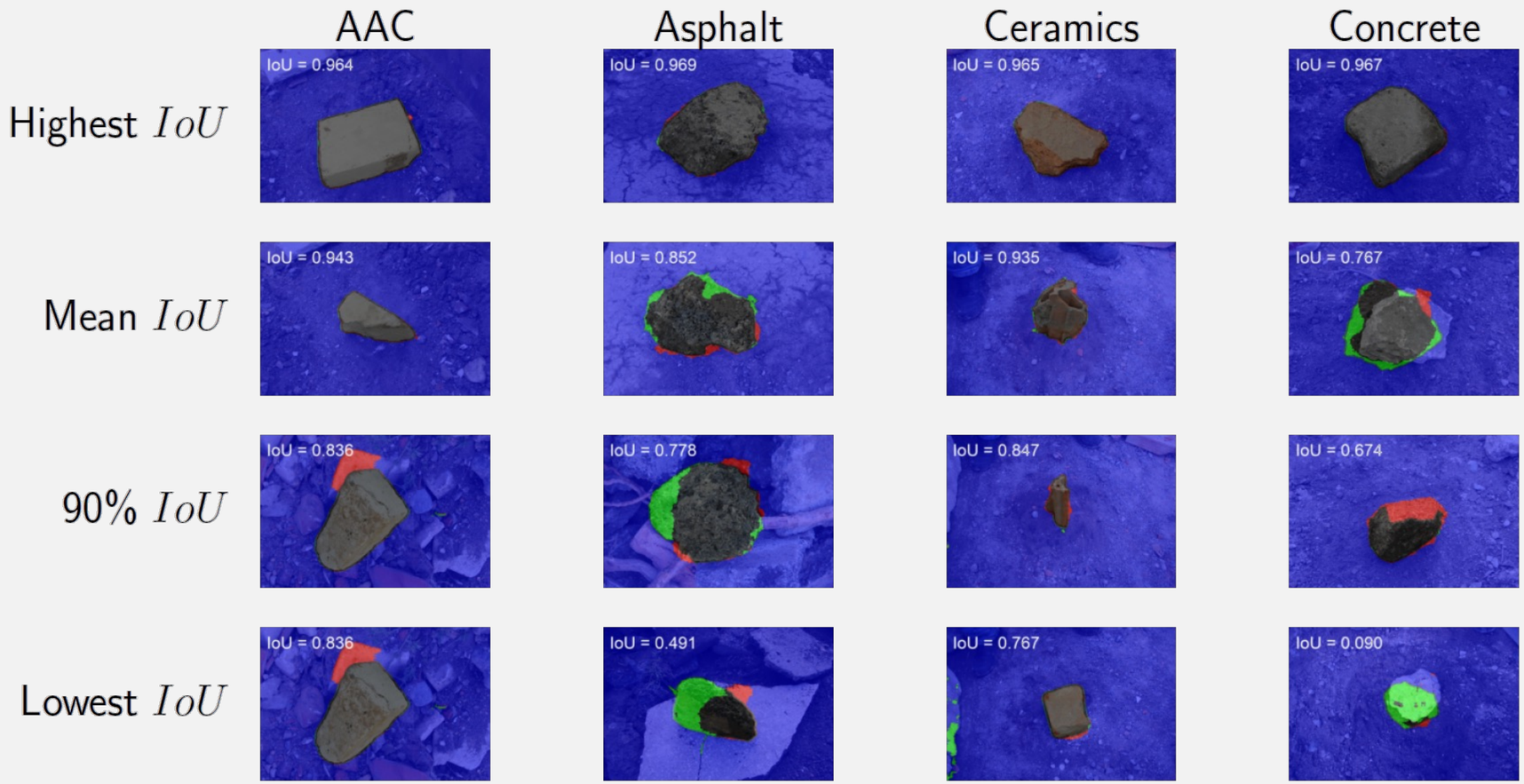
CDW RECOGNITION | Segmentation (more fragments at a time) – Intersection over Union (*IoU*)

Class	Mean IoU
AAC	0.943
Asphalt	0.865
Ceramics	0.935
Concrete	0.767



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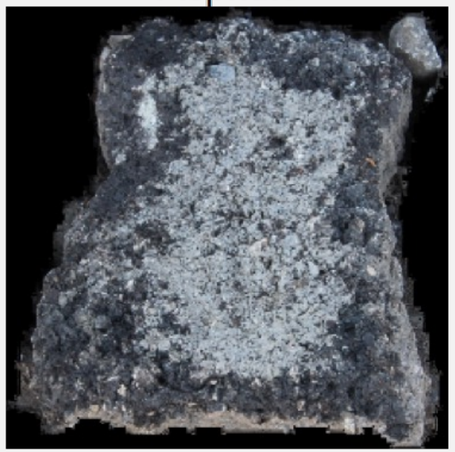
CDW RECOGNITION | Segmentation (more fragments at a time) – ResNet for classification

AAC

Asphalt



Ceramics

Concrete

Model	Accuracy (%)
CNN	85.9%
GB	92.3%
MLP	91.3%
ResNet	**95.3%**

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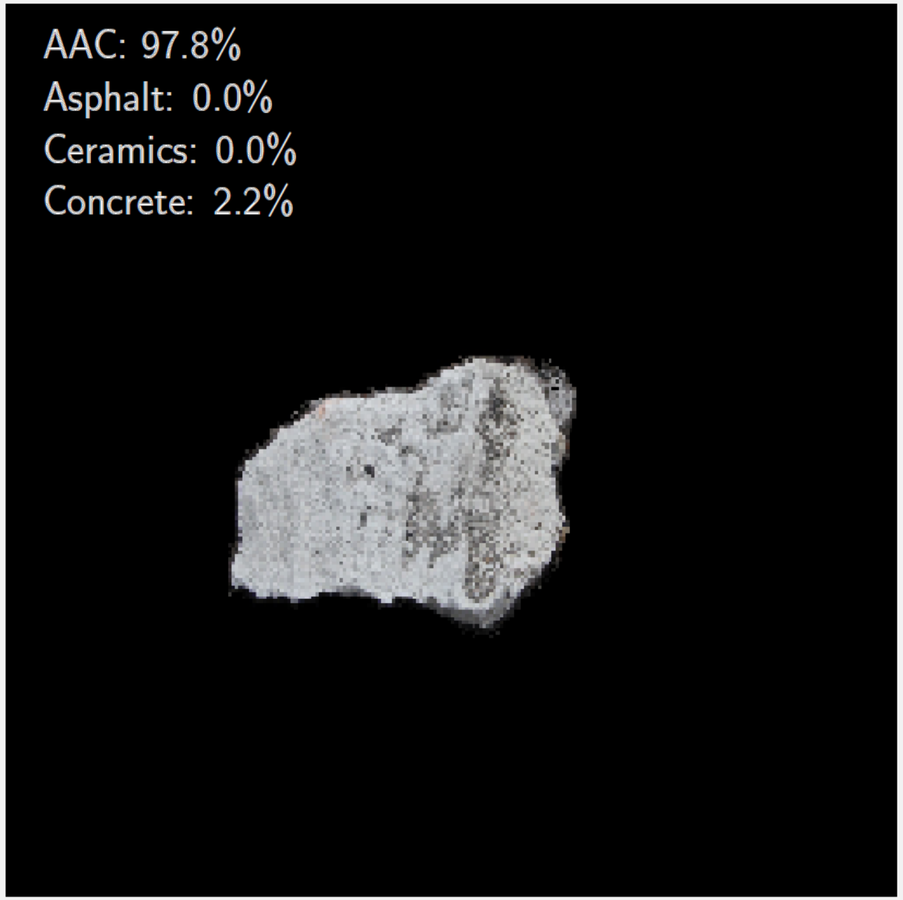
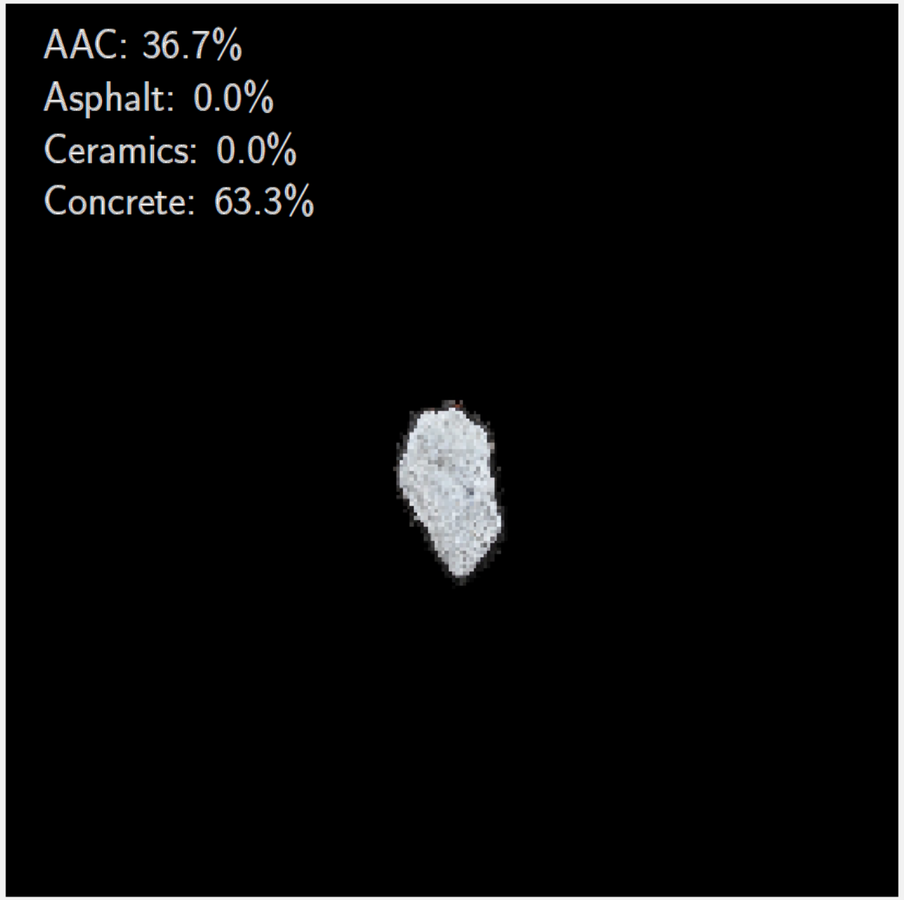
CDW RECOGNITION | Segmentation (more fragments at a time) – ResNet for classification

Correct Prediction



Incorrect Prediction



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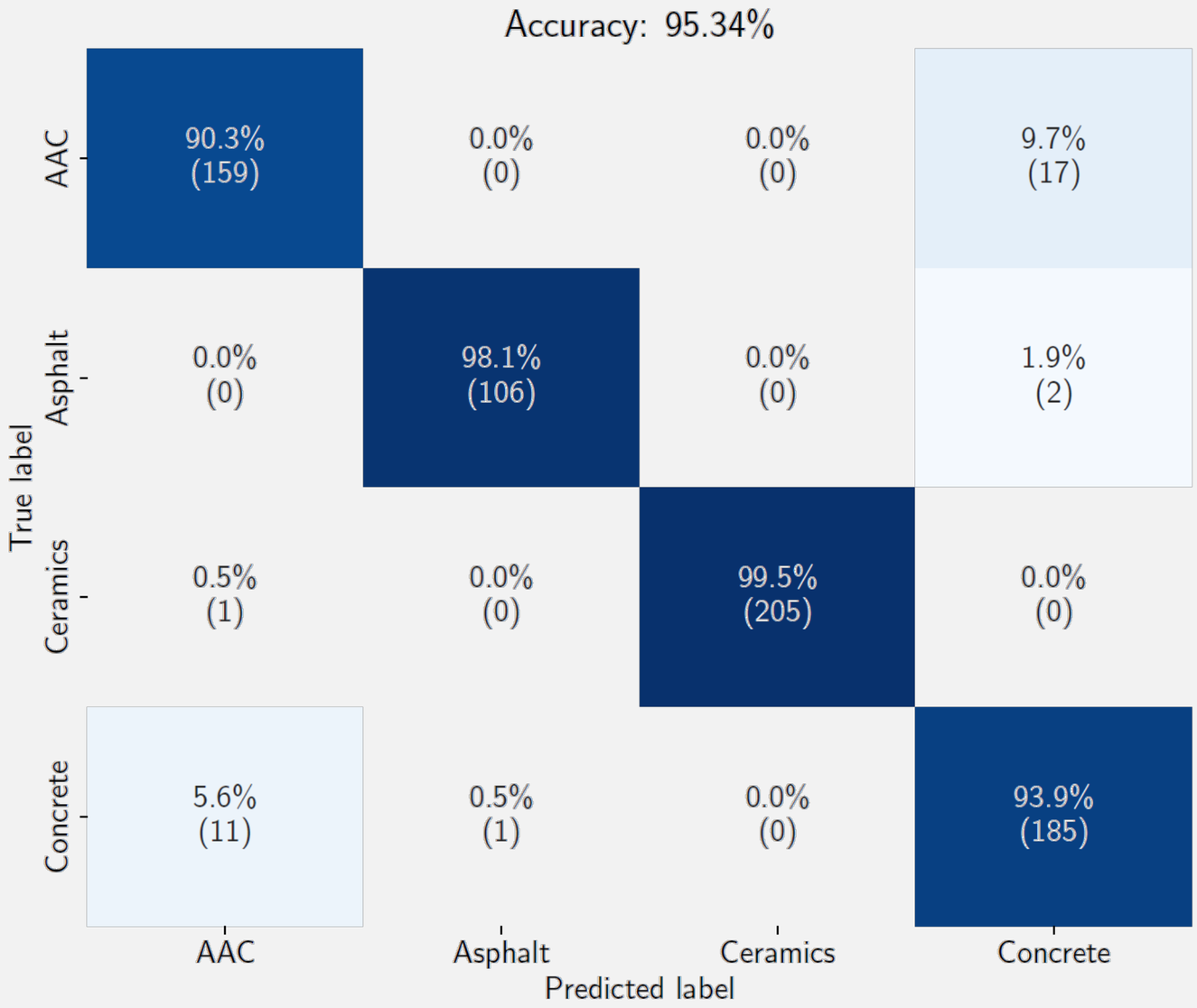
CDW RECOGNITION | Segmentation (more fragments at a time) – ResNet for classification



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THANK YOU
FOR YOUR ATTENTION

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