



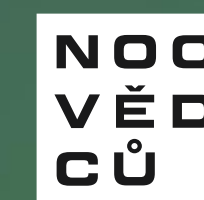
Funded by  
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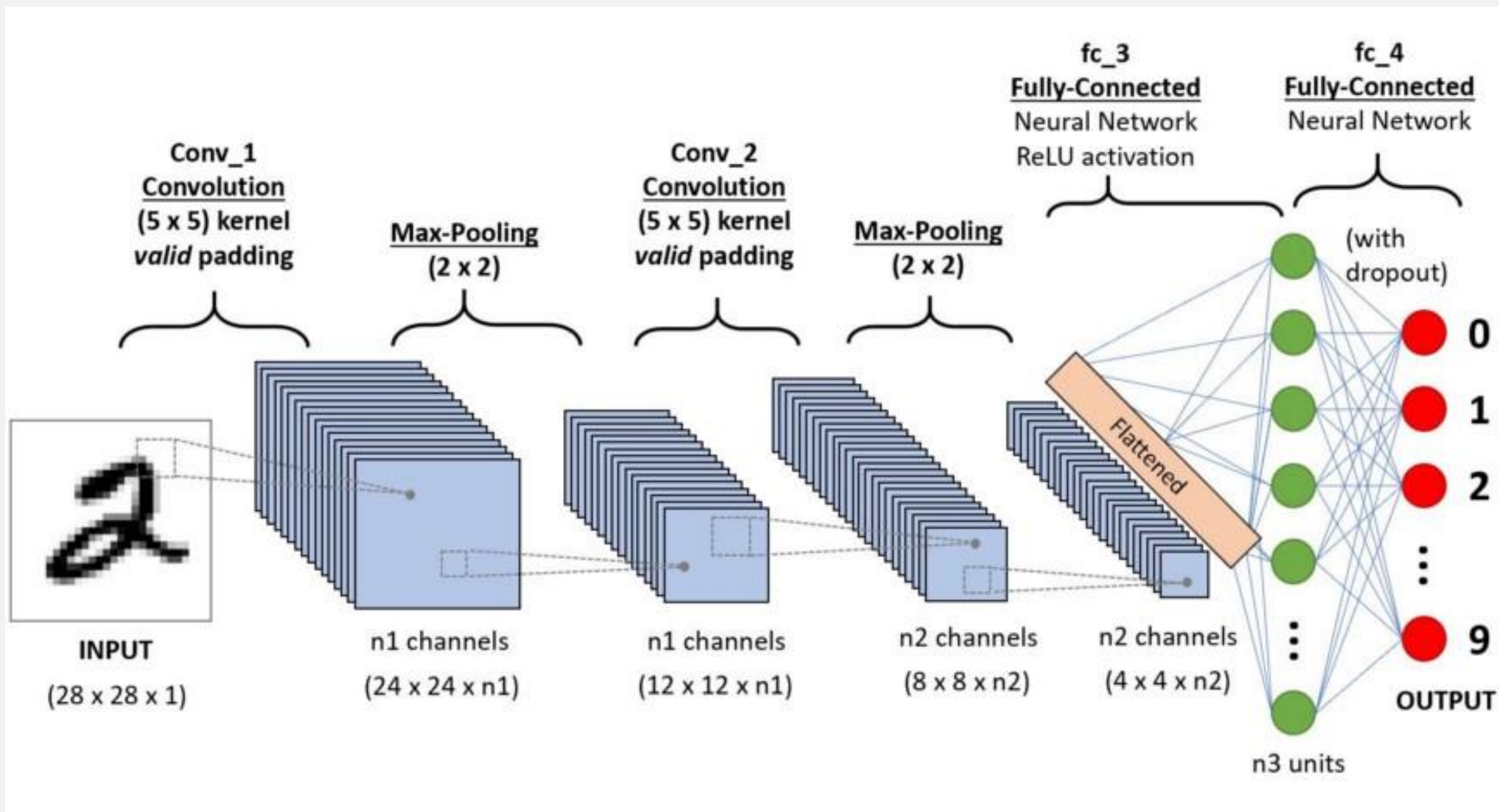
UK Research  
and Innovation

# Za oponou dat: Tajemství algoritmů pro třídění demoličního odpadu

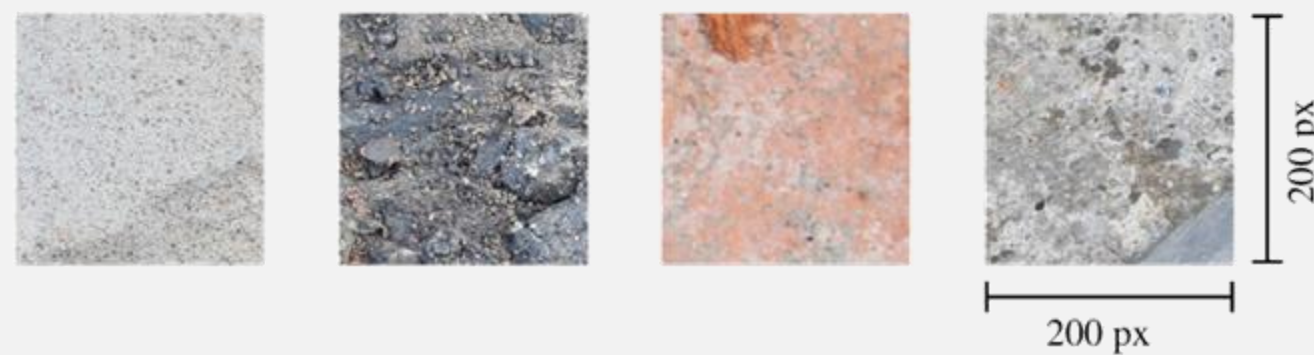
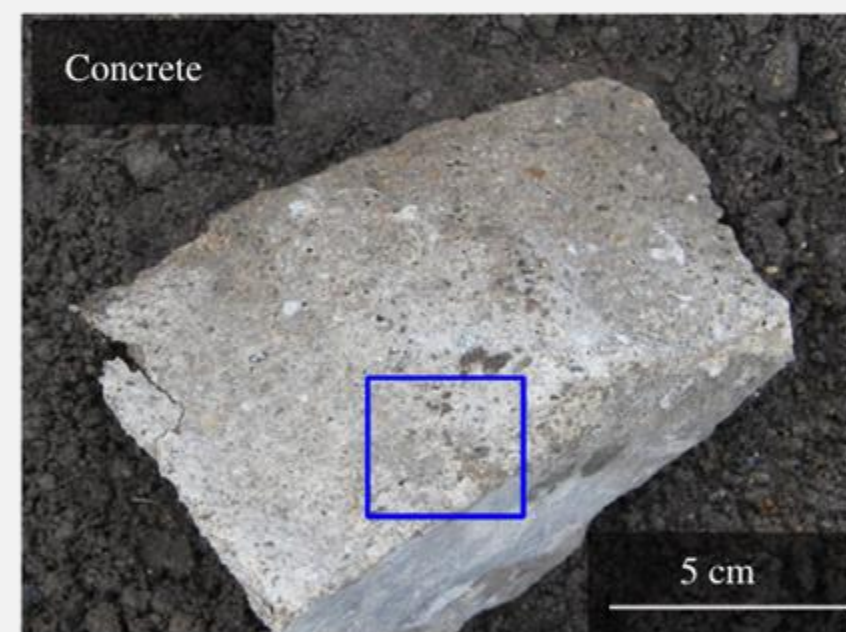
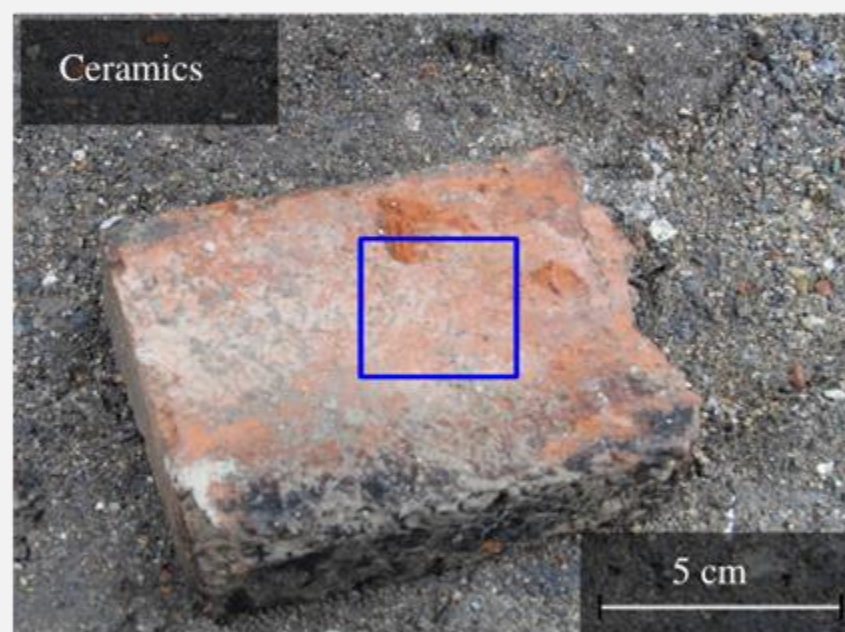
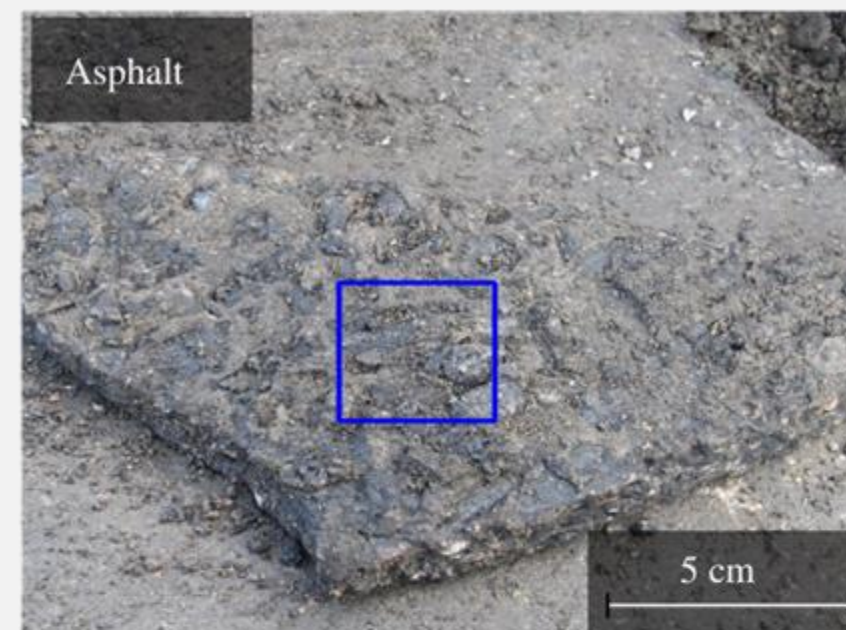
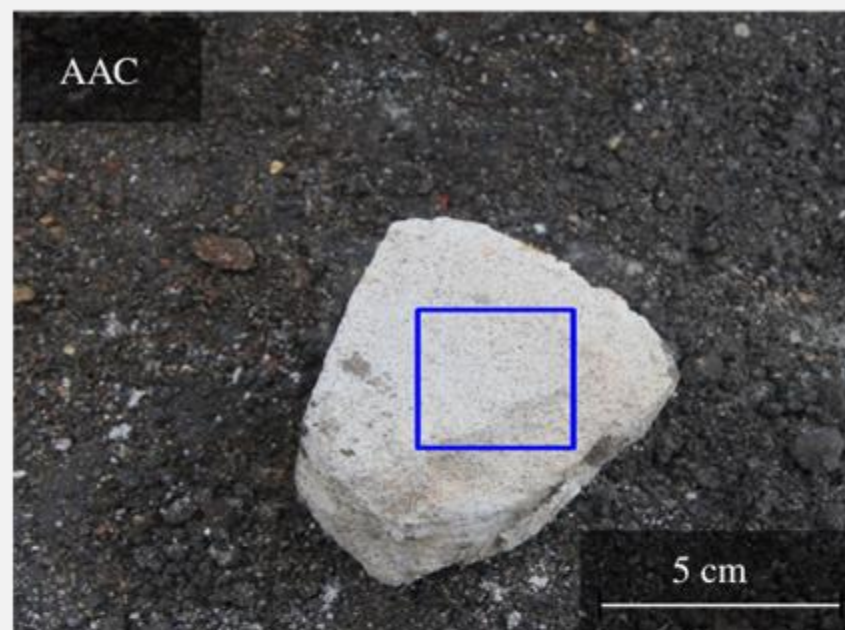
By VACLAV NEZERKA,  
Fakulta stavební ČVUT v Praze



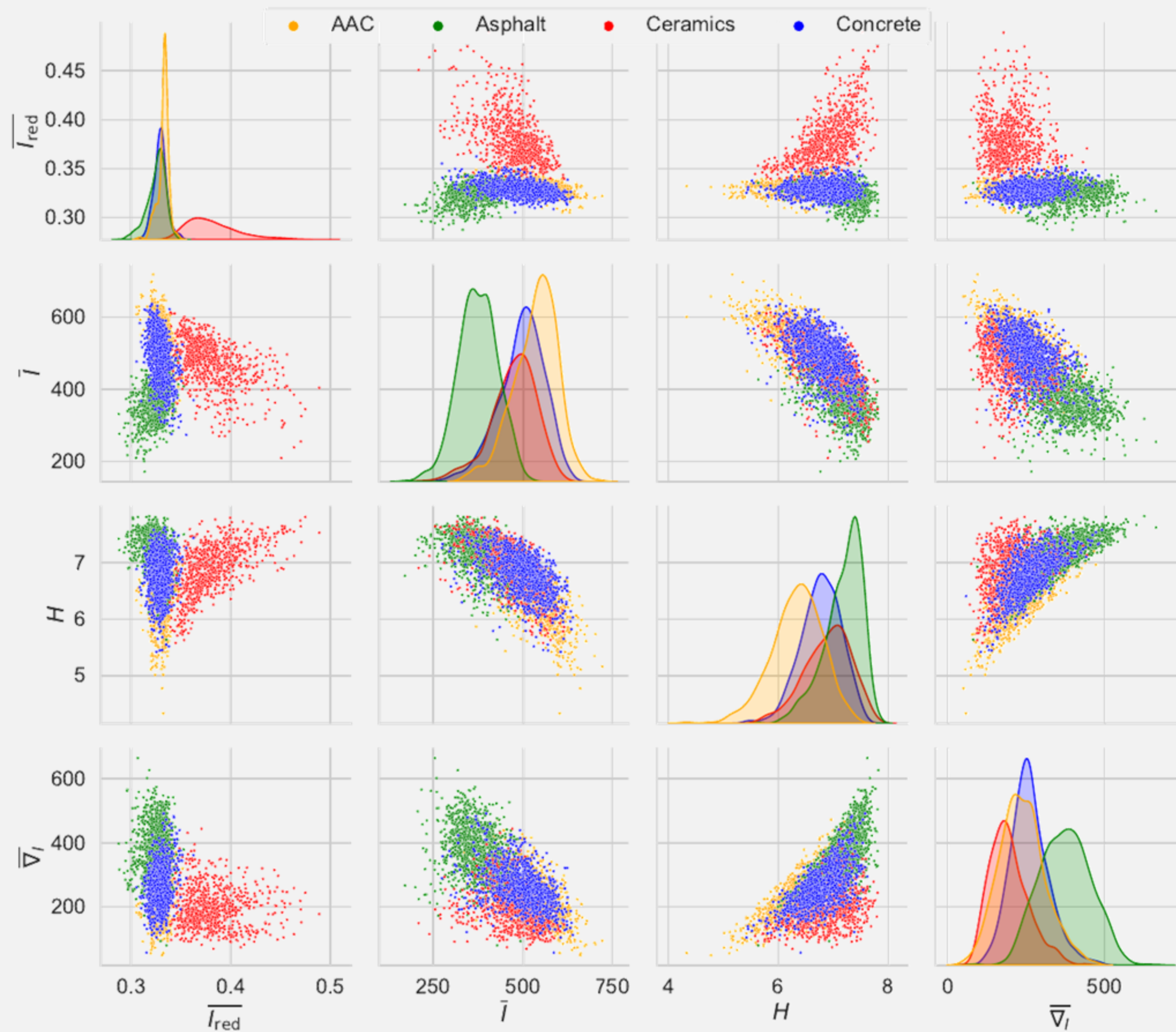
# Strojové učení | Co to je?



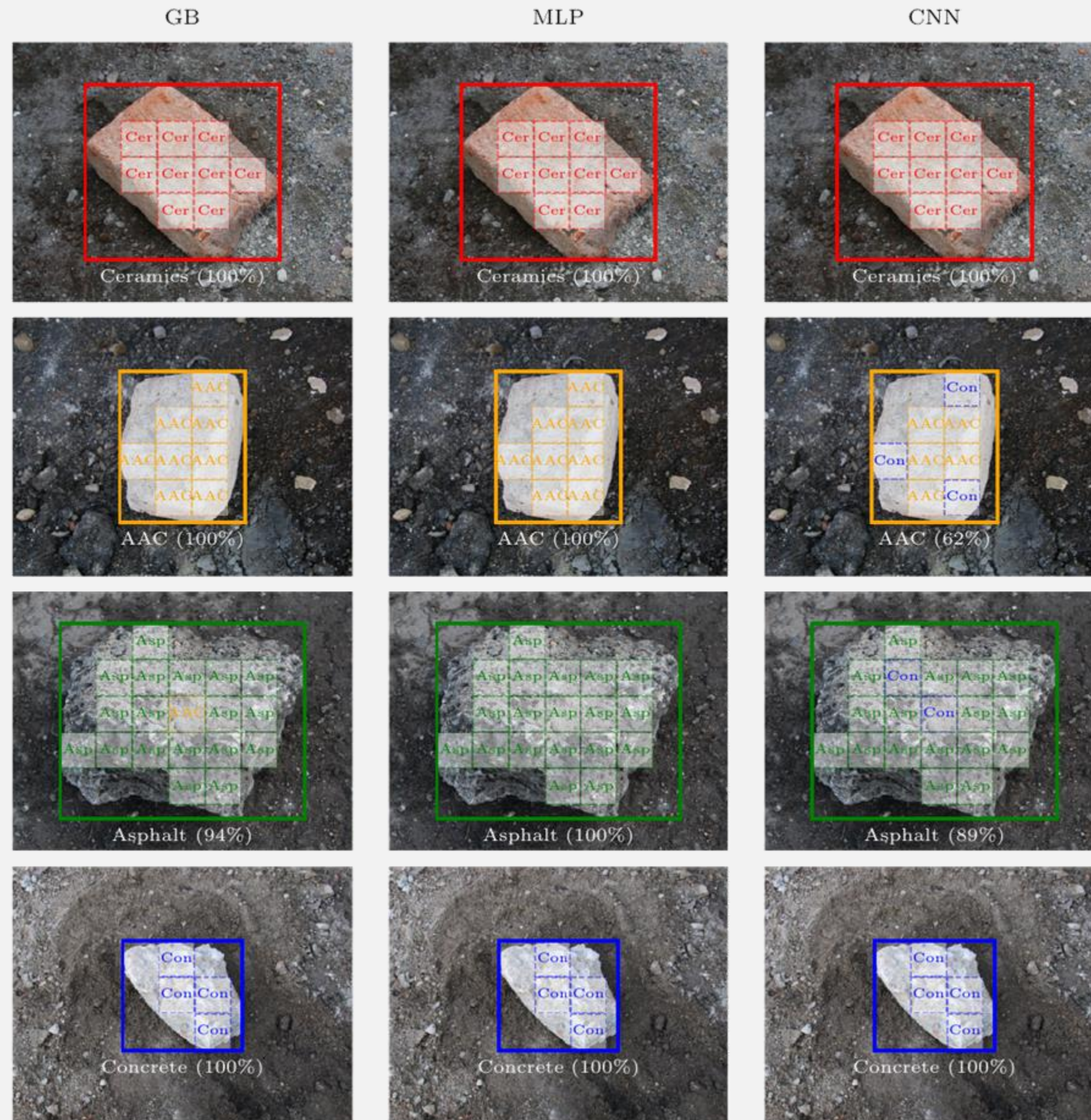
# Rozpoznávání materiálů | Popis textury



# Rozpoznávání materiálů | Corelace mezi charakteristikami textury



# Klasifikace odpadů | Lokalizace pro robotickou manipulaci



## Modely vs. člověk | Chybovost

		GB ( $\theta_{\text{test}} = 80.9\%$ )				MLP ( $\theta_{\text{test}} = 81.5\%$ )			
True label	AAC	77.9% (183)	4.3% (10)	0.4% (1)	17.4% (41)	72.3% (170)	6.4% (15)	0.4% (1)	20.9% (49)
	Asphalt	1.8% (4)	88.9% (201)	0.4% (1)	8.8% (20)	3.1% (7)	88.5% (200)	0.0% (0)	8.4% (19)
	Ceramics	2.6% (4)	0.6% (1)	95.5% (148)	1.3% (2)	3.2% (5)	0.6% (1)	95.5% (148)	0.6% (1)
	Concrete	25.2% (52)	10.2% (21)	0.0% (0)	64.6% (133)	18.4% (38)	7.3% (15)	0.5% (1)	73.8% (152)
		AAC	Asphalt	Ceramics	Concrete	AAC	Asphalt	Ceramics	Concrete
		Predicted label				Predicted label			

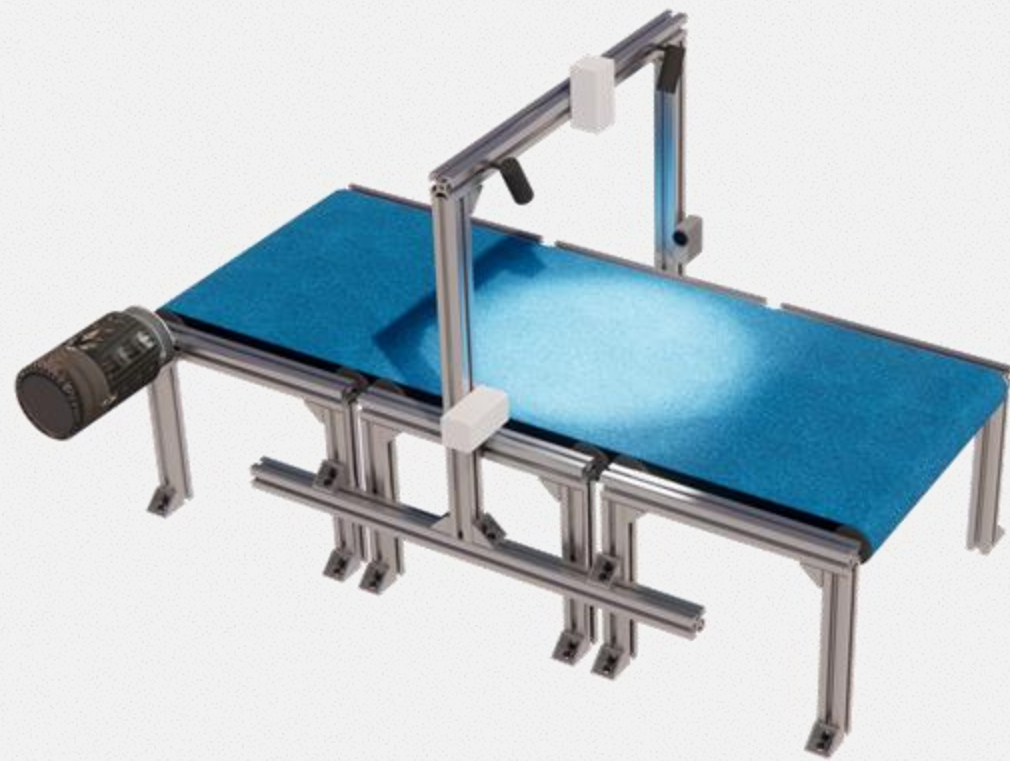
  

		CNN ( $\theta_{\text{test}} = 82.1\%$ )				Manual ( $\theta_{\text{test}} = 87.2\%$ )			
True label	AAC	68.5% (161)	0.0% (0)	0.0% (0)	31.5% (74)	84.5% (993)	0.0% (0)	0.8% (9)	14.7% (173)
	Asphalt	1.3% (3)	90.3% (204)	0.0% (0)	8.4% (19)	0.2% (2)	82.1% (928)	0.1% (1)	17.6% (199)
	Ceramics	1.9% (3)	0.6% (1)	96.1% (149)	1.3% (2)	0.1% (1)	0.3% (2)	97.7% (757)	1.9% (15)
	Concrete	8.7% (18)	12.1% (25)	1.0% (2)	78.2% (161)	6.7% (69)	2.7% (28)	2.7% (28)	87.9% (905)
		AAC	Asphalt	Ceramics	Concrete	AAC	Asphalt	Ceramics	Concrete
		Predicted label				Predicted label			

## Třídění stavebního a demoličního odpadu | Získávání vzorků

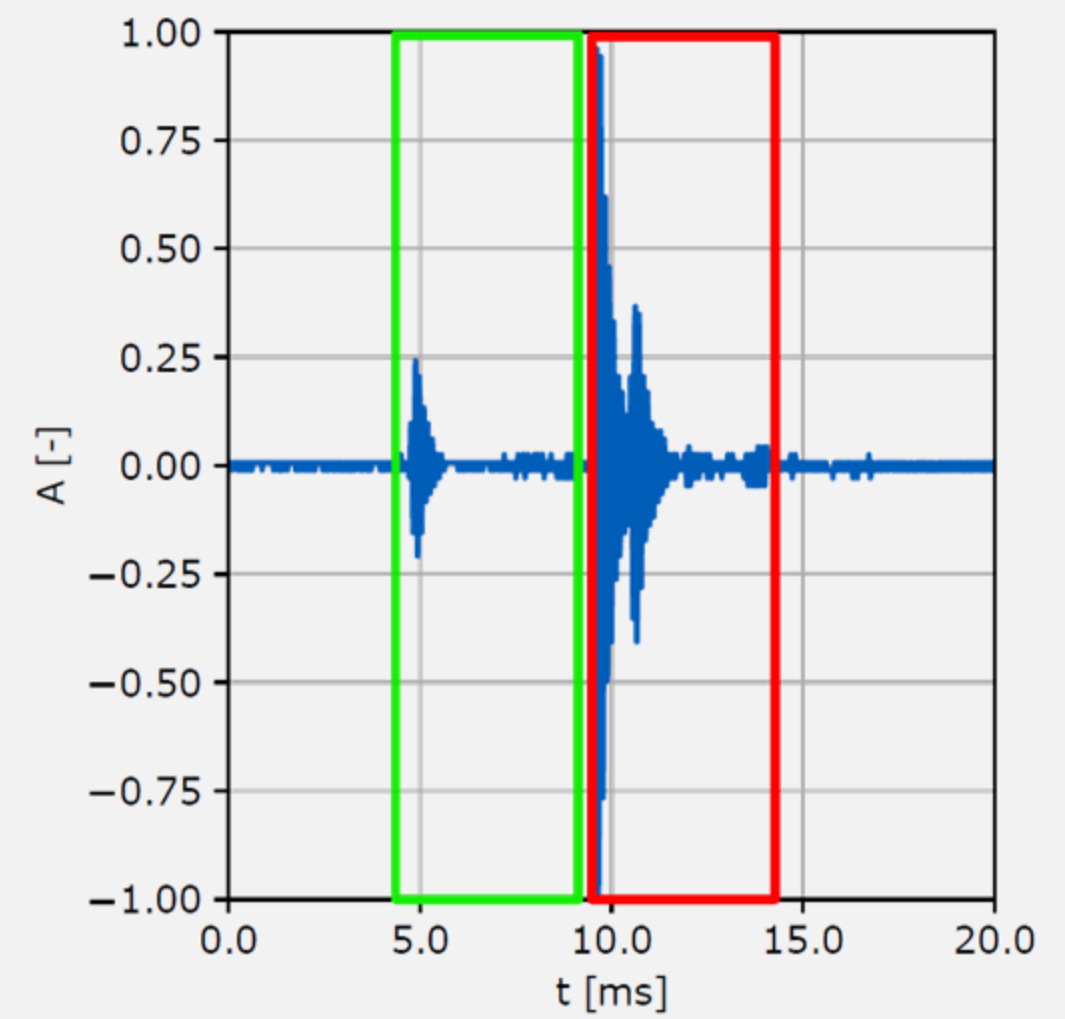
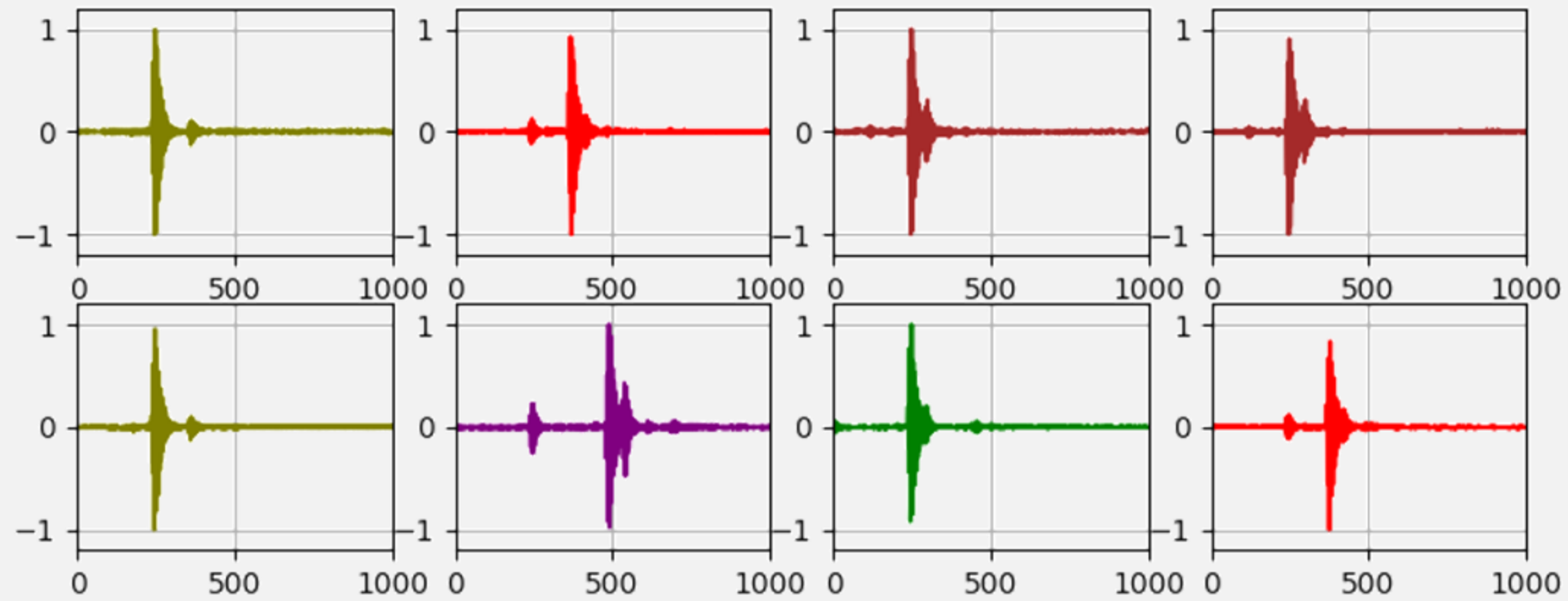


# Třídění stavebního a demoličního odpadu | Získávání vzorků (dat)

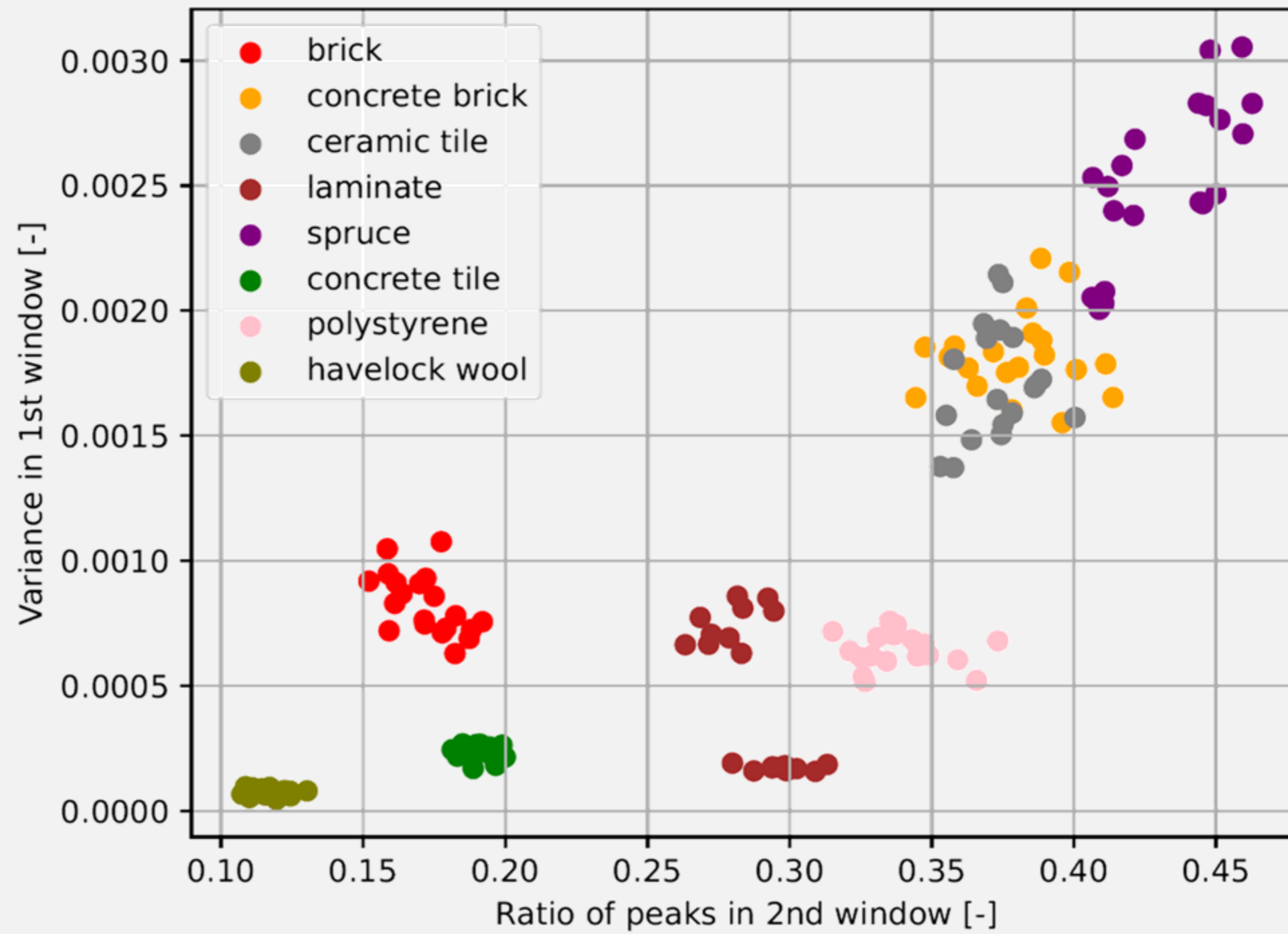




## Rozpoznávání materiálů | Využití ultrazvuku



## Rozpoznávání materiálů | Využití ultrazvuku





**Automated Solutions for  
Sustainable and Circular  
Construction and Demolition  
Waste Management**



**Funded by the  
European Union**



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Automated Solutions For Sustainable  
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