

Supplementary Information: Additional Figures

Can Deep Learning Assist Automatic Identification of Layered Pigments from XRF Data?

Bingjie (Jenny) Xu^a, Yunan Wu^a, Pengxiao Hao^{a,b}, Marc Vermeulen^{a,c}, Alicia McGeachy^{a,d}, Kate Smith^e, Katherine Eremin^e, Georgina Rayner^e, Giovanni Verri^f, Florian Willomitzer^{a,g}, Matthias Alfeld^h, Jack Tumblin^a, Aggelos Katsaggelos^a and Marc Walton^{a,i,*}

^a Northwestern University, 2145 Sheridan Road, Evanston, IL, United States.

^b Shanghai University, 333 Nanchen Rd, Shanghai, China.

^c The National Archives, Bessant Dr, Richmond TW9 4DU, United Kingdom.

^d The Metropolitan Museum of Art, 1000 5th Ave, New York, NY, United States.

^e Harvard Art Museums, Straus Center for Conservation and Technical Studies, 32 Quincy St, Cambridge, MA, United States.

^f Art Institute of Chicago, 111 S Michigan Ave, Chicago, IL, United States.

^g University of Arizona, 1630 E University Blvd, Tucson, AZ, United States.

^h Delft University of Technology, 2628 CN Delft, Netherlands.

ⁱ M+, 38 Museum Drive, West Kowloon Cultural District, Hong Kong, China.

* Corresponding author: marc.walton@mplus.org.hk



Figure S1. Elemental maps of the Gauguin painting obtained using PyMCA. Elements identified include silicon (Si), sulfur (S), chromium (Cr), iron (Fe), cobalt (Co), copper (Cu), zinc (Zn), arsenic (As), tin (Sn), mercury (Hg) and lead (Pb).

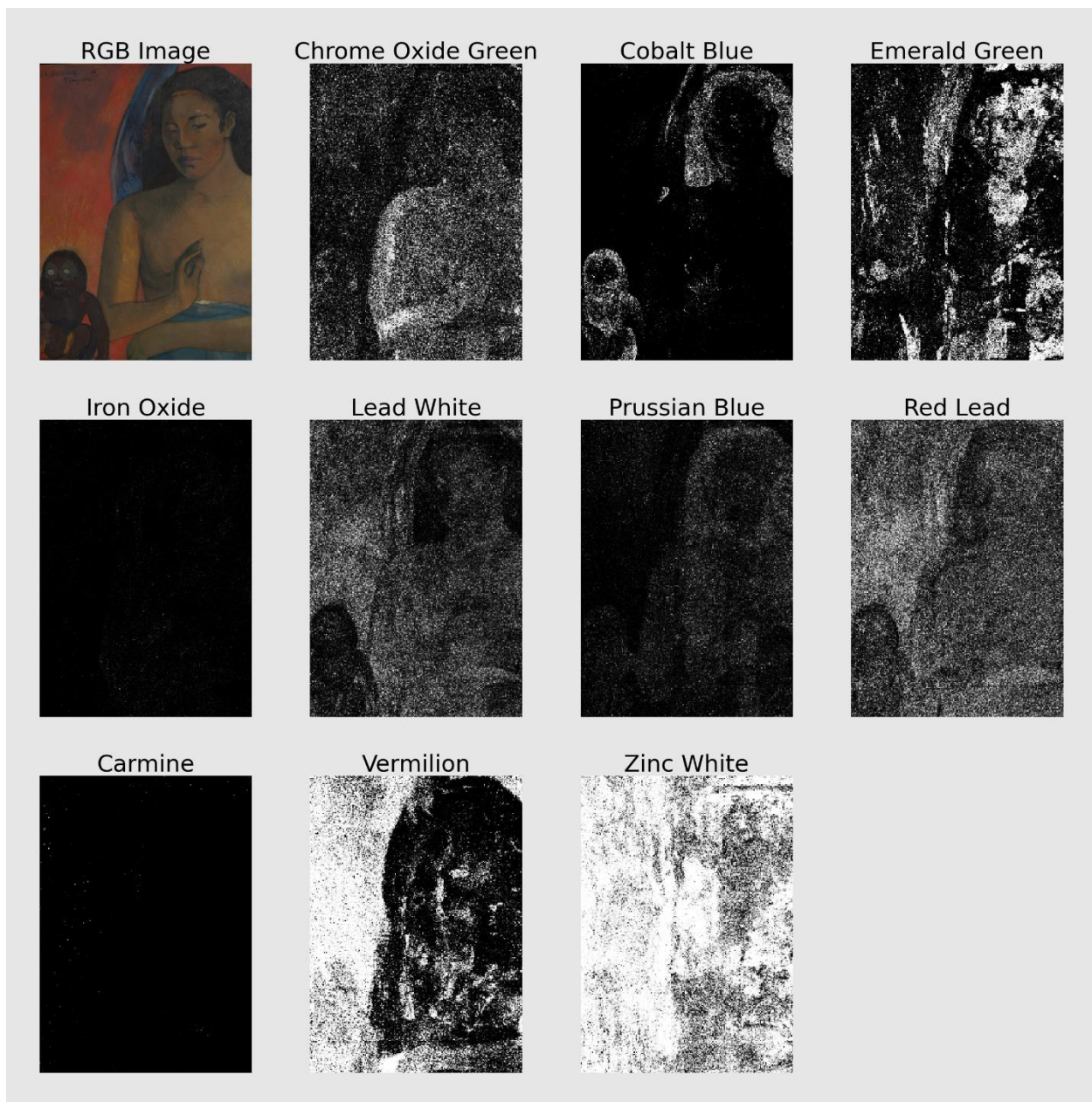


Figure S2. Pigment maps of the Gauguin painting before finetuning. Pigments identified include chrome oxide green, cobalt blue, emerald green, iron oxide, lead white, Prussian blue, red lead, carmine, vermilion and zinc white.

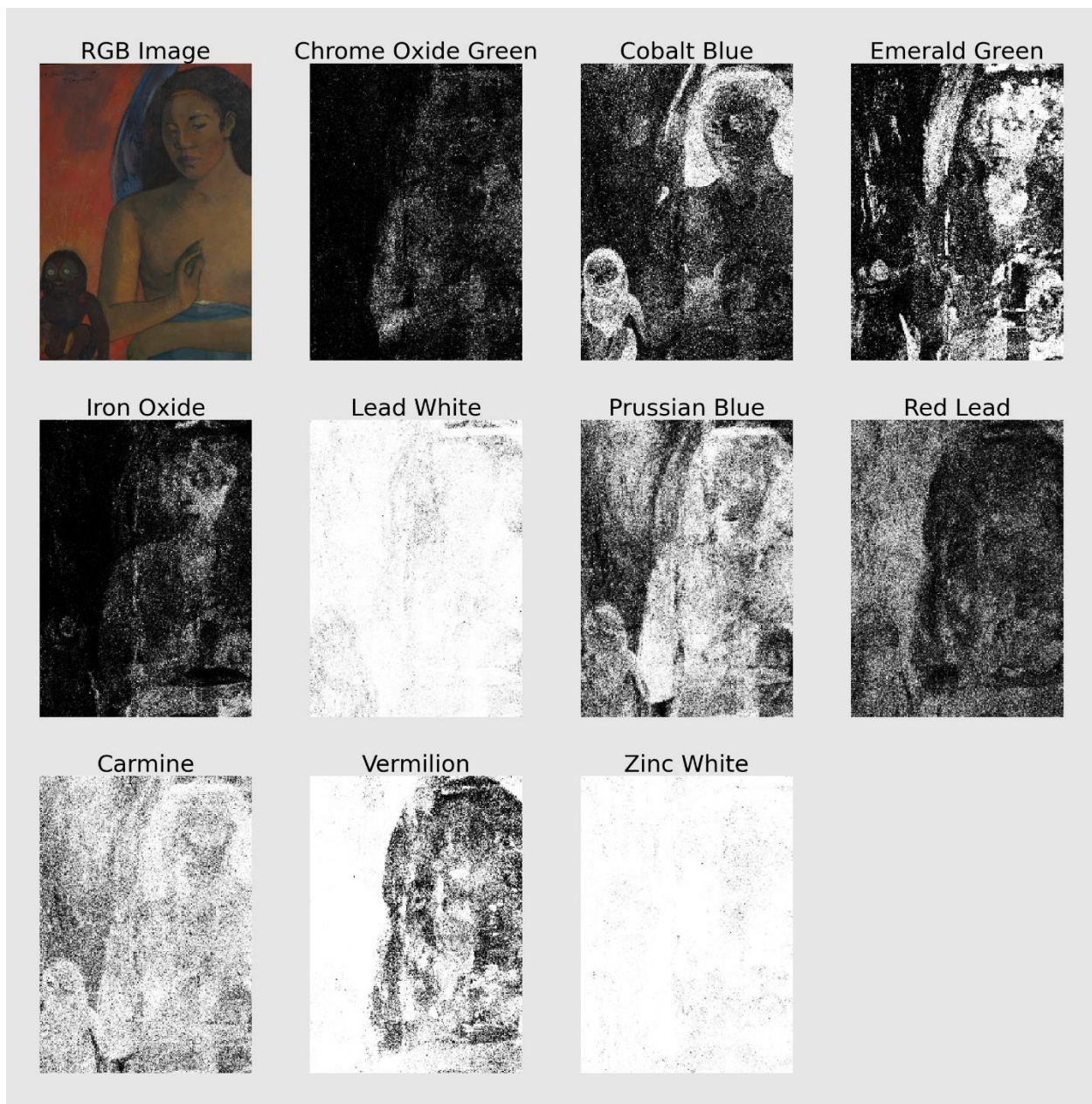


Figure S3. Pigment maps of the Gauguin painting after finetuning. Pigments identified include chrome oxide green, cobalt blue, emerald green, iron oxide, lead white, Prussian blue, red lead, carmine, vermilion and zinc white.

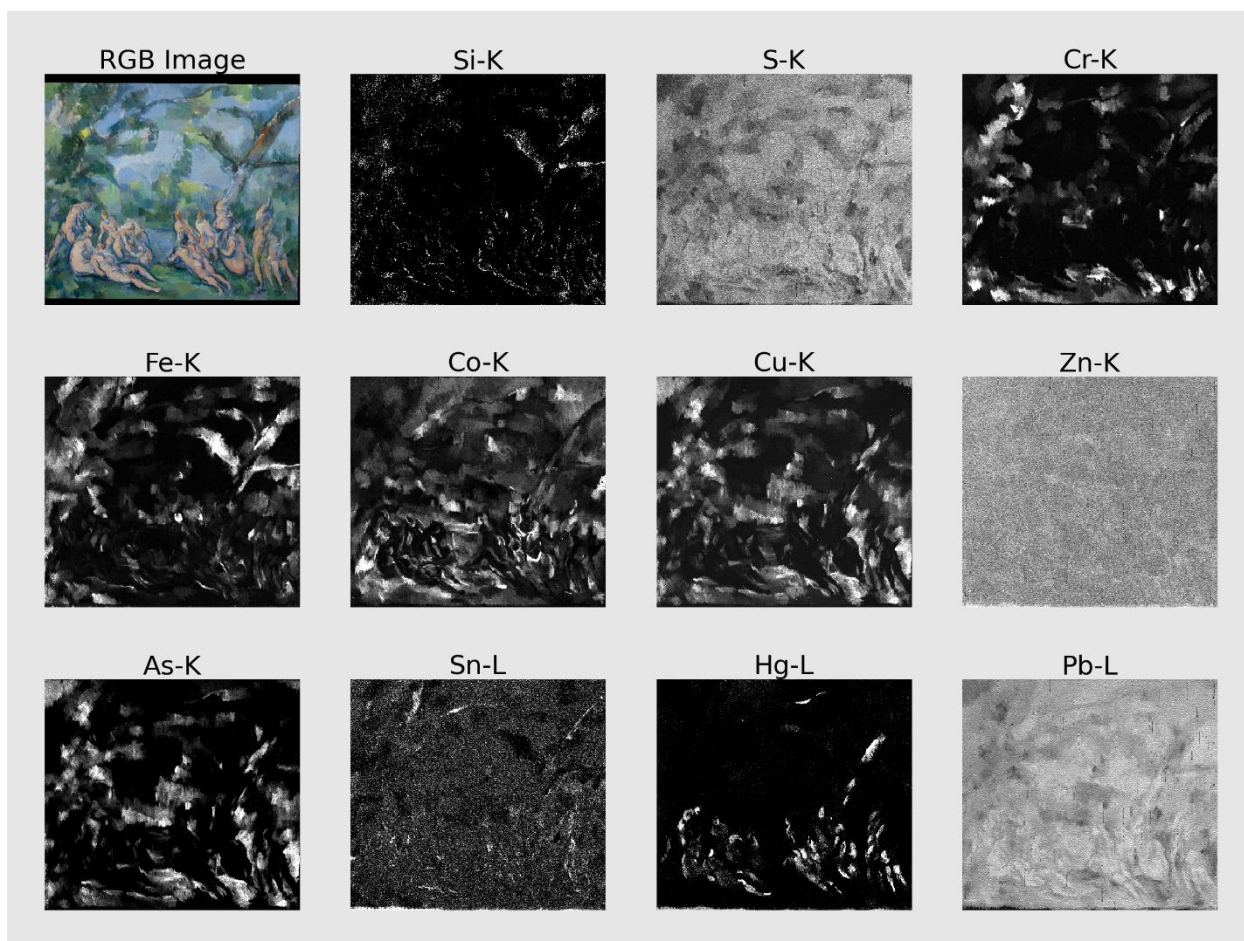


Figure S4. Elemental maps of the Cezanne painting obtained using PyMCA. Elements identified include silicon (Si), sulfur (S), chromium (Cr), iron (Fe), cobalt (Co), copper (Cu), zinc (Zn), arsenic (As), tin (Sn), mercury (Hg) and lead (Pb).

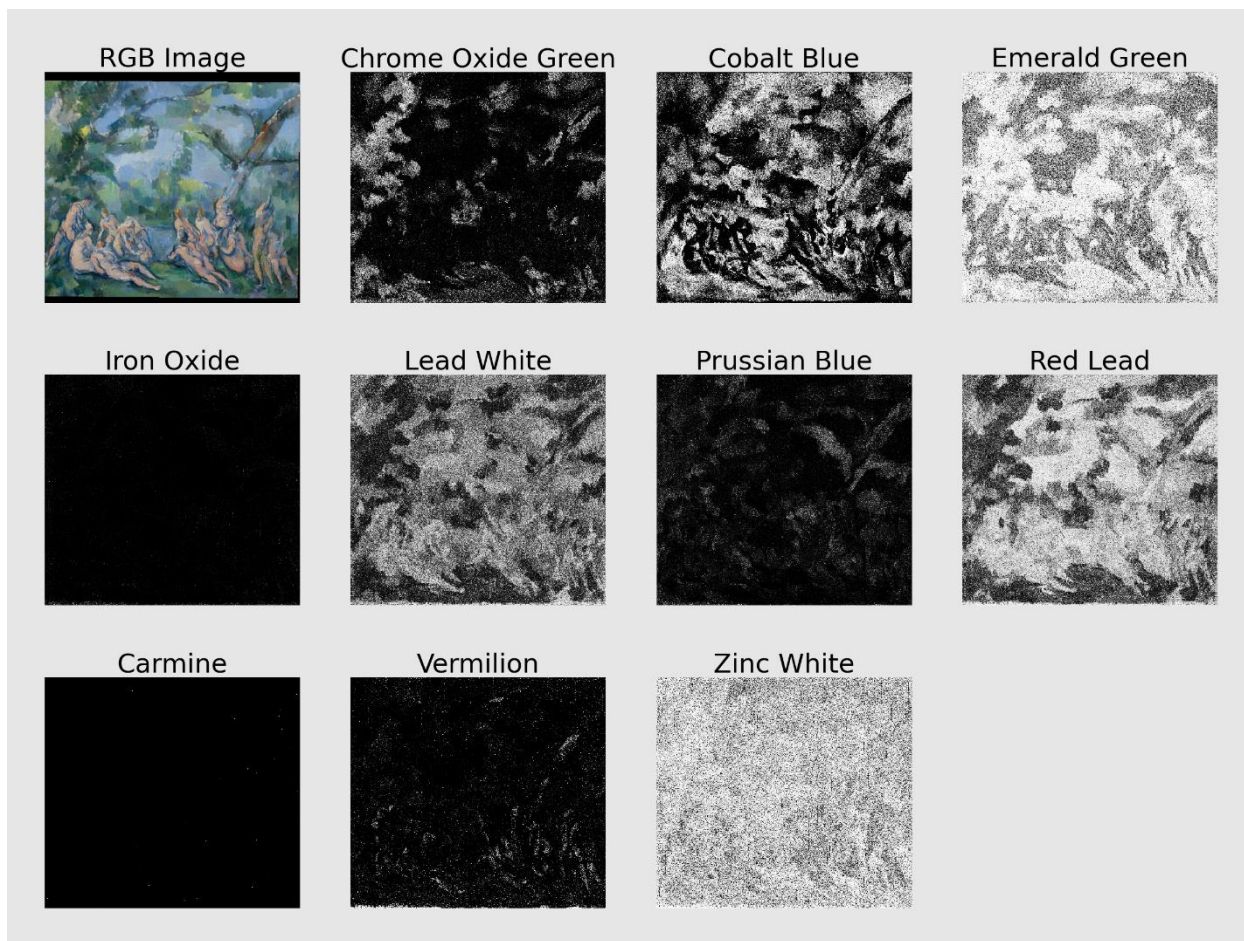


Figure S5. Pigment maps of the Cezanne painting before finetuning. Pigments identified include chrome oxide green, cobalt blue, emerald green, iron oxide, lead white, Prussian blue, red lead, carmine, vermilion and zinc white.

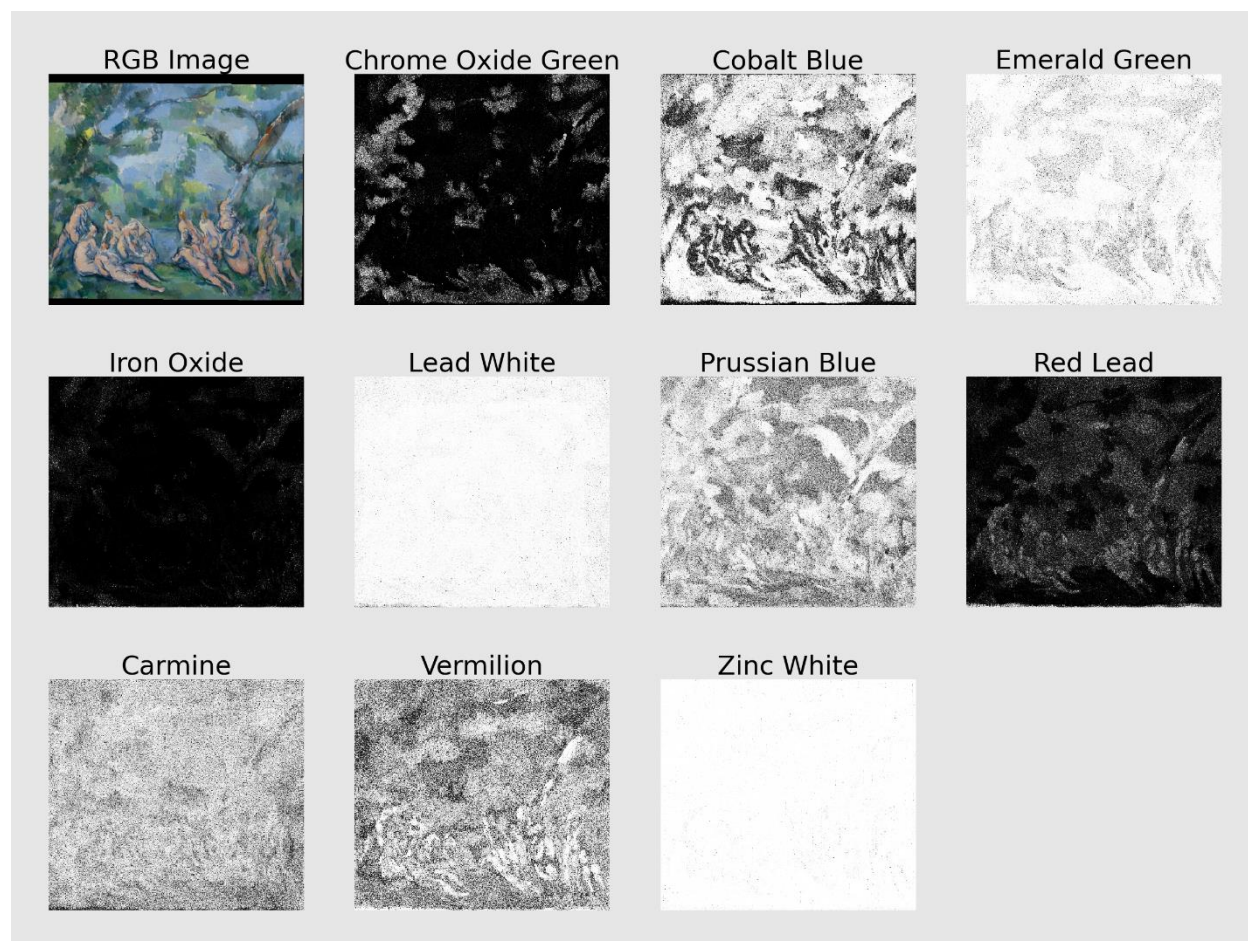


Figure S6. Pigment maps of the Cezanne painting after finetuning. Pigments identified include chrome oxide green, cobalt blue, emerald green, iron oxide, lead white, Prussian blue, red lead, carmine, vermilion and zinc white.