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$$\vec{a} = \langle 5, 2, 7 \rangle$$

$$\vec{b} = \langle 4, 6, 1 \rangle \quad |\vec{b}| = \sqrt{4^2 + 6^2 + 1^2} = \sqrt{53} \quad \vec{u}_b = \frac{1}{\sqrt{53}} \langle 4, 6, 1 \rangle$$

Scalar projection
of \vec{a} onto \vec{b} = $\vec{a} \cdot \vec{u}_b$

$$= \langle 5, 2, 7 \rangle \cdot \left(\frac{1}{\sqrt{53}} \langle 4, 6, 1 \rangle \right)$$

$$= \frac{1}{\sqrt{53}} (5)(4) + (2)(6) + (7)(1)$$

$$= \frac{1}{\sqrt{53}} (39)$$

$$= \boxed{\frac{39}{\sqrt{53}}}$$

vector projection
of \vec{a} onto \vec{b} = $\frac{39}{\sqrt{53}} \vec{u}_b$

$$= \frac{39}{\sqrt{53}} \left(\frac{1}{\sqrt{53}} \langle 4, 6, 1 \rangle \right)$$

$$= \boxed{\frac{39}{53} \langle 4, 6, 1 \rangle}$$