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AI61003 Linear Algebra for AI & HL Assignment 01 - Problem 02

$$avg\left(y\right) = \frac{1}{1} \frac{1}{n} \cdot y$$

$$= \frac{1^{T}}{n} \cdot (\lambda x + \beta 1 u)$$

(: Scalar multiplicat is distributive
=
$$1 (x 1 n x + \beta 1 n 1 n)$$

 n
(: $1 n 1 n = n$)
= $1 (x 1 n x + \beta n)$

$$(: 1_{n} 1_{n} = n)_{T}$$

$$= 1 (x 1_{n} x + \beta n)$$

$$\alpha \left(\frac{1}{n} \right) + \beta$$

$$= \chi \left(\frac{1}{n}\chi\right) + \beta$$

Let
$$y = xx + \beta 1n \quad (y \in \mathbb{R}^n)$$

$$\hat{y} = y - \left(\frac{1n}{n}y\right) 1n$$

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	By definition,
ga, kerjandari dili dilika dilang dilang dilang dilang salam Salam pada sa Alika dilangkan dilangga Balang dipunda Pilang di Indonésia di Salam di	std(y) = mms(g) = g 2/Jn
	$\frac{2}{\ \hat{\mathbf{y}}\ _{2}^{2}} = \hat{\mathbf{y}}^{T} \hat{\mathbf{y}}$
	Now $\hat{y} = \alpha x + \beta 1n - 1 (1n (\alpha x + \beta 1n)) 1n$
	(: scabar multiplicat ⁿ is dist nibutive) = xx+ β1n - I(x1nx+β1n1n)1n
	$\left(\begin{array}{cccccccccccccccccccccccccccccccccccc$
	$= xx + \beta 1n - \frac{1}{n}(x1nx)1n - \beta 1n$
	(by definition of \hat{x}) $= \lambda \left(x - \frac{1}{2} \left(\frac{1}{2} x\right) 1_{1}\right) = \lambda \hat{x}$
	$ = \chi \left(\chi - \frac{1}{n} \left(\frac{1}{n} \chi \right) \frac{1}{n} \right) = \chi \chi $
	$=) \ \hat{y}\ _{2}^{2} = (\langle \hat{x} \rangle)^{T} (\langle \hat{x} \rangle) = \langle \hat{x}^{T} \rangle$
	$\ \hat{\mathbf{y}}\ _{2} = \ \mathbf{z}^{2} \hat{\mathbf{x}}^{T} \hat{\mathbf{x}}\ = \ \mathbf{z}\ \ \hat{\mathbf{x}}\ _{2}$
offente de de la companya de la comp La companya de la companya dela companya de la companya del companya de la companya del companya de la companya del la co	The second of the Control of the second of t
	=> std(y) = $ x x _2 J $ (by definit of std(x)) = $ x $ std(x)
	=) std (xx+ B1n) = x std (x) Hence proved.
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