Ra	DATE
	PAGE

	PAGE
	MRUAN A GENERAL CS 747: Weekly Dwz 3
	VIBHAV A GGARWAL
	190050128
_	a) We have,
_	
_	uchat = pa + [] ln/]
	$\int 2u^{t} \left(\delta(t) \right)$
_	
	3 ba + 1 ln(1) (:: 8'(t) > 8(t) > 0
	1 2 ut (5'(t))
_	
	= fat + 1 fut KL (Fag ucb-kla) b
	Jeut (la transma)
	[: Due to the dof n of ucb-ket]
	L see may of uch kea
_	= pt + i.kl(pt, ucb-kle)
	$\sqrt{2}$
_	
	3 Pt + 1 = 2 (Bt - wh-10) + 12
	? Pa + 1 - 2 (Pa - wbilt)?
	[Pinsker's Inequality
	- mores thoquality
	= pa + pt - ucb-kla
	pa sub-rea
	= pt + ucb-kla - pa [: ucb-kla > pt]
	pa ucokla - pa [· ucokla / pa]
	= uch-kla
	WCD-Klay
_	the many that the same
_	Hence, uch a > ech-kla as desired.

6	We sho	uld no	t ex	best a l	ower re	eret	brom	the
	uch-pr	apored	ala	pect a l yorithma always	because	12	tighter	upper
	bound	mey	not	always	result	m	lower.	regret.
		0	- 34	0				

Take, for example, the extreme case when the upper confidence bound is simply to . This is the greedy streetingly and we know this incurs linear regret.

In fact, we cannot achieve a lower regret than the one given by KL-UCB because it matches the constant given by Law and Robbins.

= 15 - du = 3 1 / 14

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