ONE-HANDED MOBILE TEXT ENTRY Evaluation of five-key text entry techniques

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Why five keys?

- Physical limitations
 - Small devices, no space for full keyboards
 - Small keys -> errors (Fitt's law)
- Human ergonomics
 - One hand, five fingers
 - No need to move fingers between keys (speed, low-error rate, eyes free)
- Attitude
 - 5-key interface, non intimidating

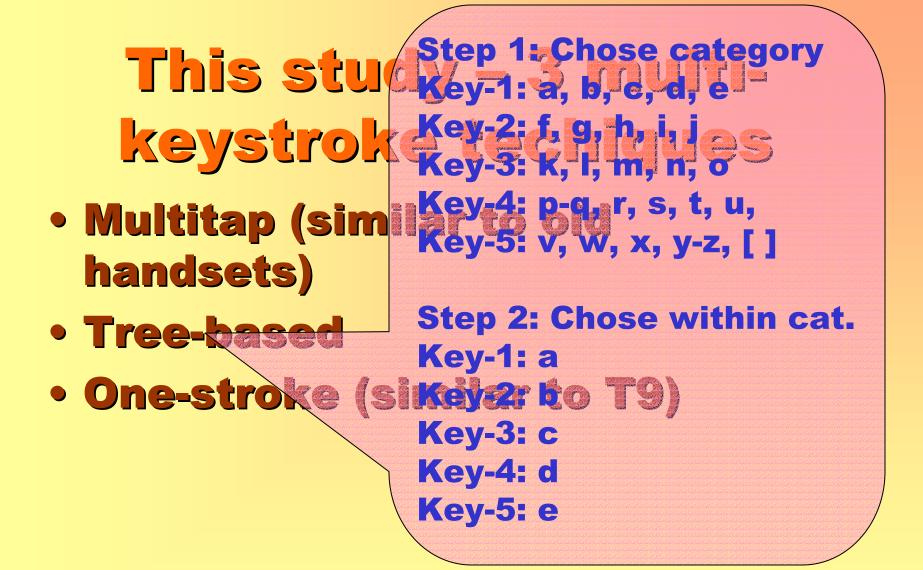
Related Work (onehand/five-keys)

- Chording (Noyes, 1983 + many more)
- Device independent handwriting (Isokoski, 2000)
- Mesh techniques (Bellman et al. 1998)
- Half-QUERTY (Matias et al, 1993)

This study – 3 multikeystroke techiques

- Multitap (similar to old handsets)
- Tree-based
- One-stroke (similar to T9)

This st Key-1: a, b, c, d, e, Key-2: grh;-i, j keys Key-3: m, n, o, p, q, r S Key 4 S, t, y N, w, x, y, z Multi Key-5: [break-key] handsets Tree-based **Characters retreived by** repeadedly pressing the • One-stroke key labelled with the desired character until it appear, then the break key.



This study – 3 multikeystroke techiques
Key-1: a, b, d, e
Multitap (simila key-2) k, g, h, i, j, k, l, m handsets)
Tree-based

• One-stroke (sir har to T9) character once.

> Word appear after word completed- or resolve ambiguities

Experiment

- Subjects:
 - 3 volunteer undergraduate students at OUC
- Equipment:
 - Desktop computer with full keyboard, monitor, mouse
 - 5-keys pammed to keys a, s, d, f and [space]
 - Text entry implemented as apples, running in browser
- Procedure each method
 - 5 minutes practice
 - 15 minutes typing session (source text on screen)
- Measurements
 - Timestamped keystroke events

Results

Subject	measure	MultiTap	Tree-based	One-stroke
Subject 1	Mean ikd	1.0	2.3	2.1
	Median ikd	0.5	1.4	1.2
	Mean ch/min	22.5	13.0	28.5
Subject 2	Mean ikd	0.76	1.62	1.97
	Median ikd	0.52	1.02	1.94
	Mean ch/min	27.2	18.6	31.1
Subject 3	Mean ikd	0.73	3.93	1.44
	Median ikd	0.24	2.13	0.55
	Mean ch/min	26.5	7.7	26.2

The one- stroke 105 strategy achieves the fastest typing				
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General conclusion

- Multi-keystroke based techniques easy and quick to learn compared to chording
- Multi-keystroke based techniques cannot match typing speeds achieveable by chording
- Multi-keystroke based techniques suitable for ordinary occational users
- Chording suitable for specialised trained users
- Maybe 5-keys not the best solution for multi-keystroke class of text entry strategies.

Thank you!!!