

TEXT INPUT

CMPT 381

# Outline

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- Modeling text
- Measuring text-entry performance
- Type-ahead
- Keyboard layouts
- Chording keyboards
- On-screen keyboards

# Modeling text

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# Modeling text

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- What is this sentence?

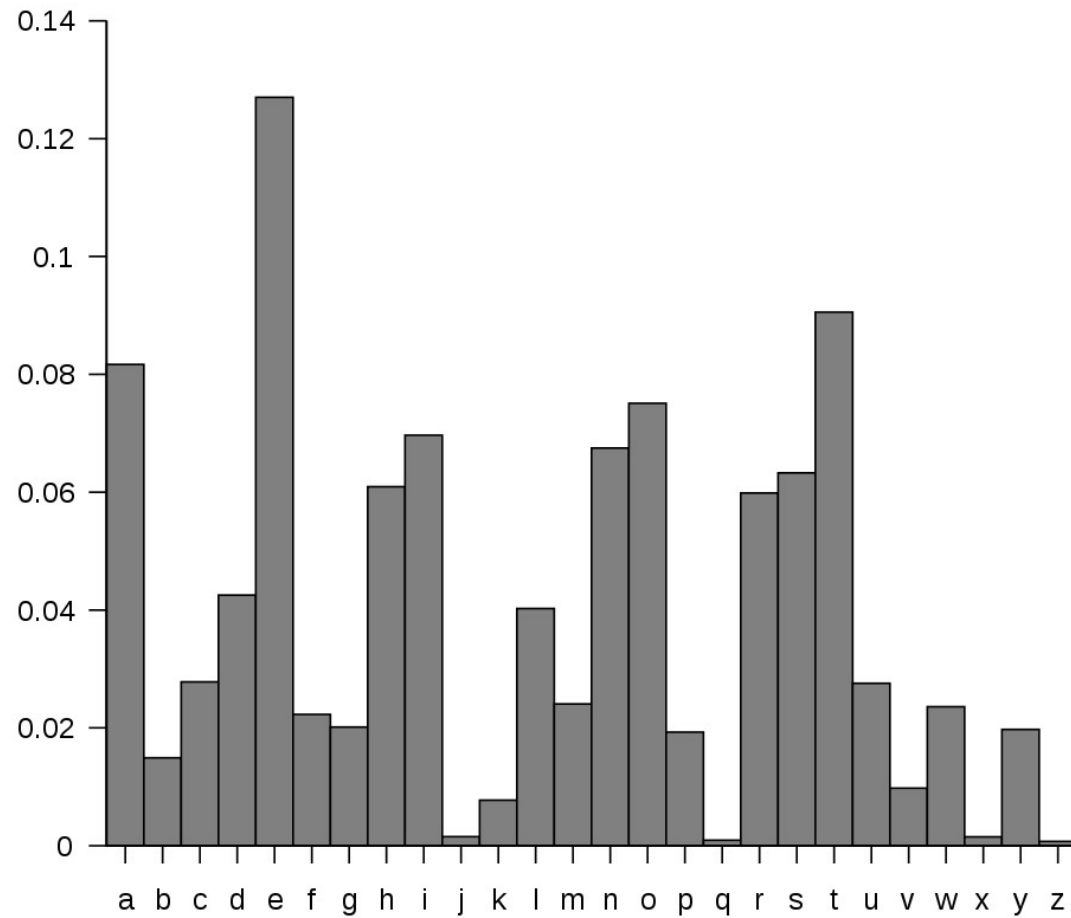


# Modeling text

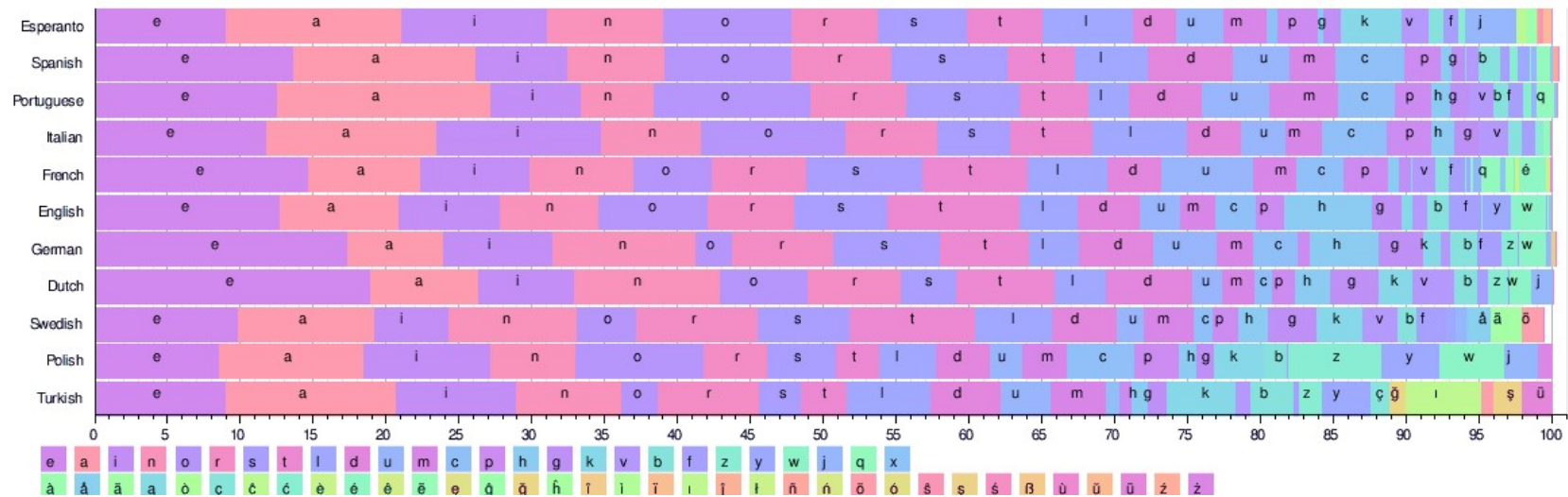
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- Information Theory
  - Abstraction for communication:
    - Transmitter, channel, receiver
  - Critical for data compression (among other things)
- Entropy (the “information content” of a message)
  - $\approx$  how easy it is to guess the message using a model
  - Random text: high entropy
  - Message is always “A”: zero entropy
- Entropy of English (native speakers):
  - about 1.6 bits / character

# Modeling text: letter frequencies



# Modeling text: letter frequencies

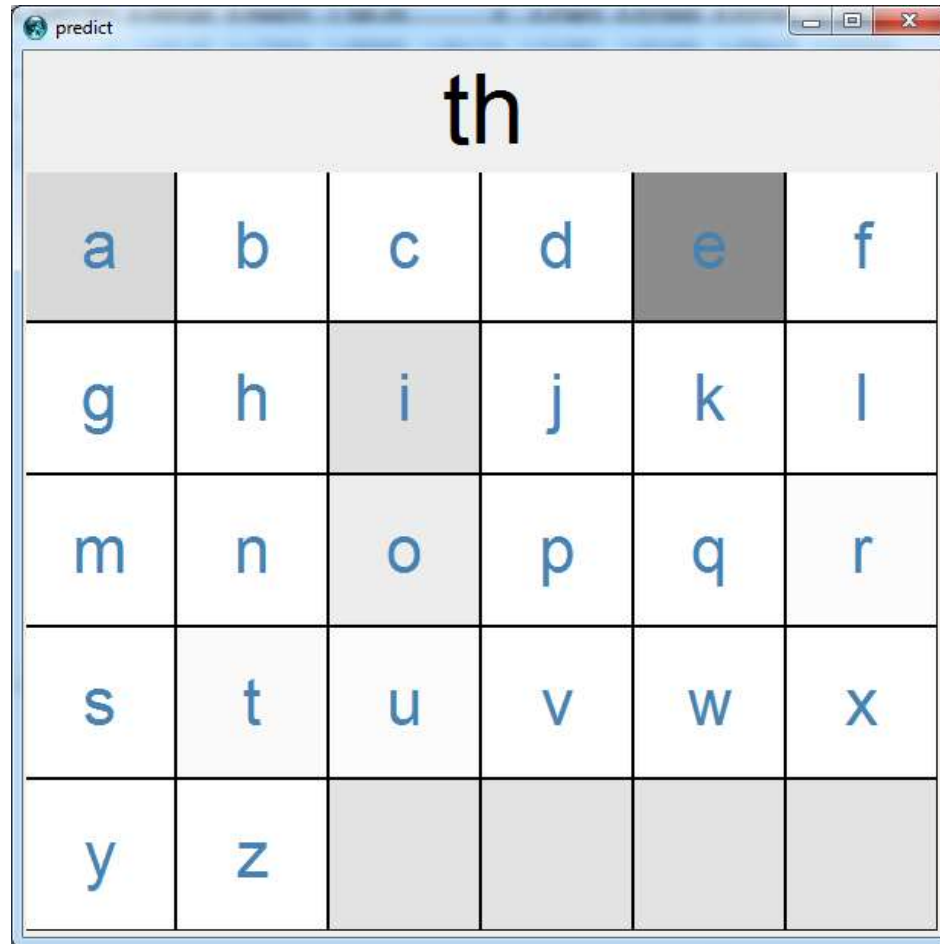


# Modeling text: bigrams

th 1.52%	en 0.55%	ng 0.18%
he 1.28%	ed 0.53%	of 0.16%
in 0.94%	to 0.52%	al 0.09%
er 0.94%	it 0.50%	de 0.09%
an 0.82%	ou 0.50%	se 0.08%
re 0.68%	ea 0.47%	le 0.08%
nd 0.63%	hi 0.46%	sa 0.06%
at 0.59%	is 0.46%	si 0.05%
on 0.57%	or 0.43%	ar 0.04%
nt 0.56%	ti 0.34%	ve 0.04%
ha 0.56%	as 0.33%	ra 0.04%
es 0.56%	te 0.27%	ld 0.02%
st 0.55%	et 0.19%	ur 0.02%



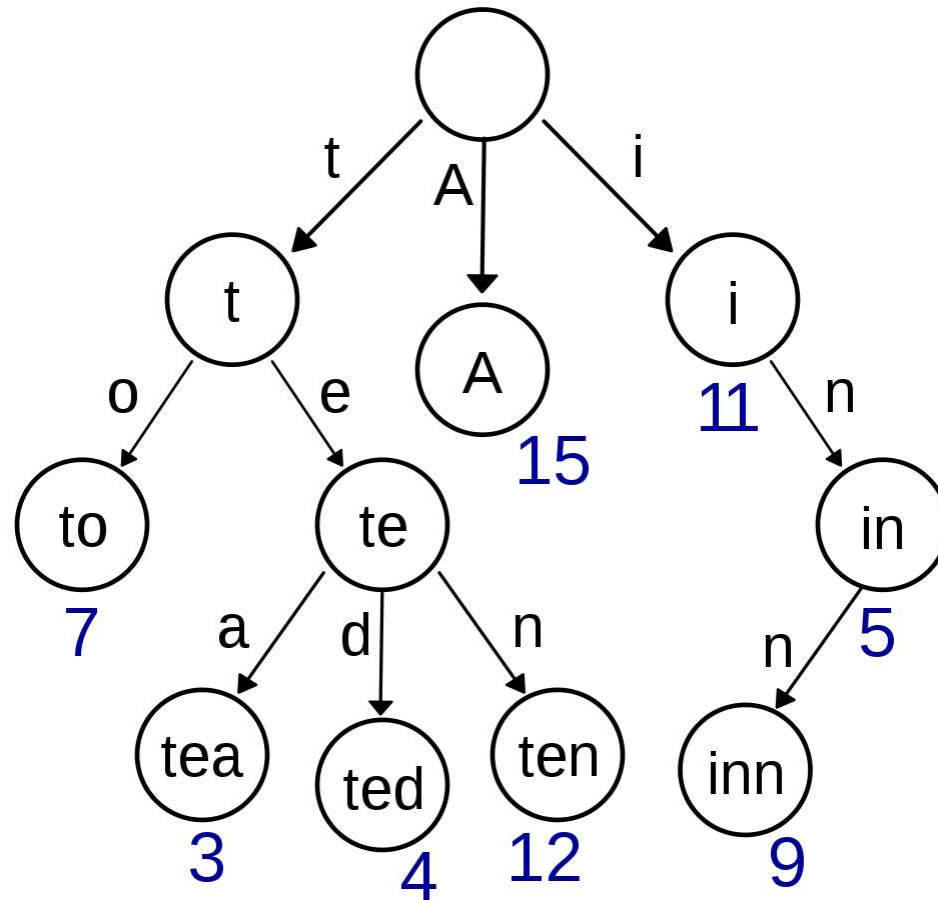
# Modeling text: prediction



th

a	b	c	d	e	f
g	h	i	j	k	l
m	n	o	p	q	r
s	t	u	v	w	x
y	z				

# Modeling text: tries



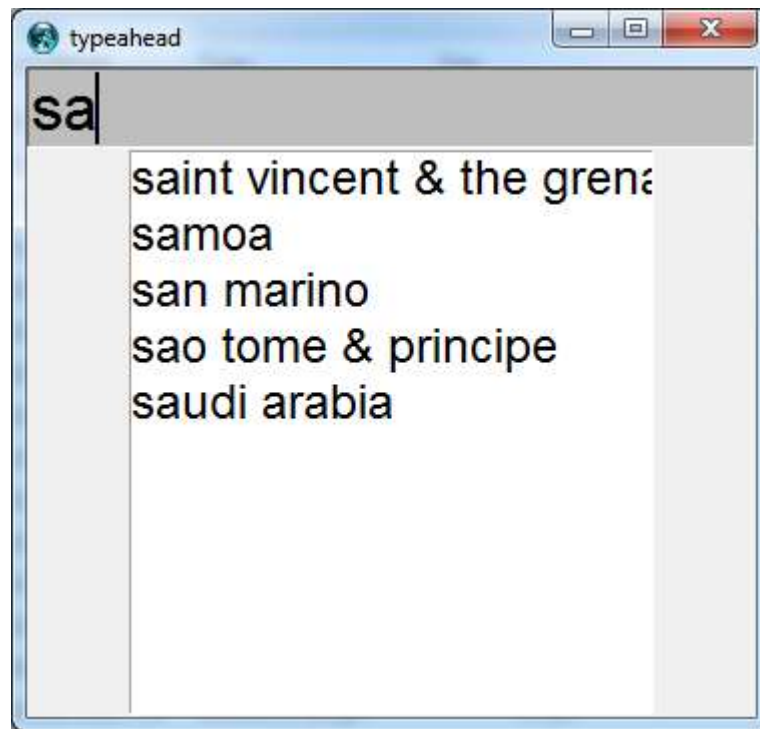
# Measuring performance

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- Speed to type a given phrase
- Number of errors
  - The quick brown fox jumped over the lazy dog
  - The quuick brown fox jumped over the lazy dog
  - The queick fvorwom nvos joimeodc oeeverm the oslax ldodg
- Edit distance

# Type-ahead

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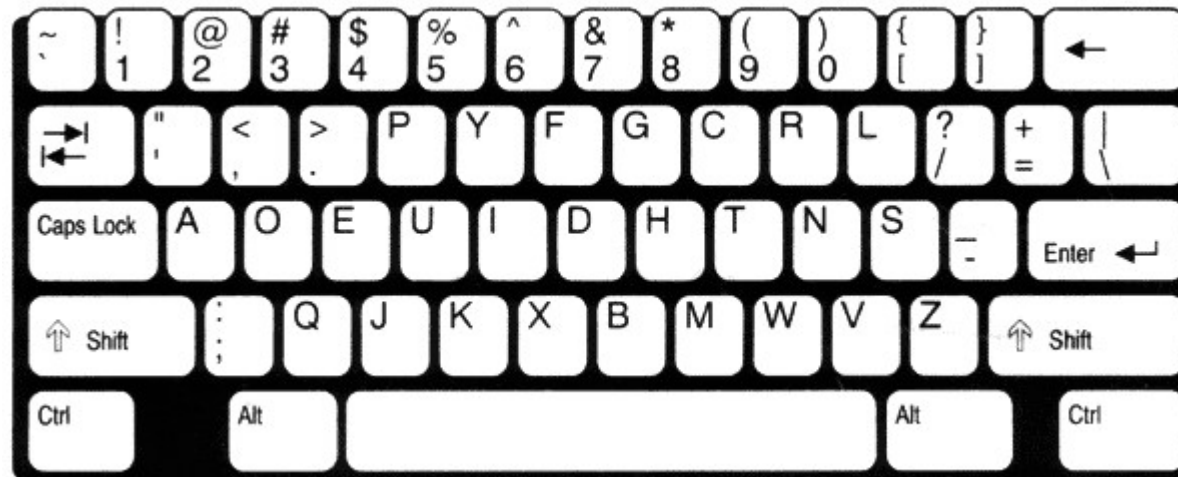
# Type-ahead with underspecified input

The screenshot shows a window titled 't9' with a green header bar. On the left, a list of words is displayed: 'again', 'against', 'chain', 'chalk', 'chance', and 'change'. On the right, the text '6 candidates' is shown above a numeric keypad. The keypad is a 4x3 grid of buttons, each containing a number and its corresponding T9 letters.

1	ABC 2	DEF 3
GHI 4	JKL 5	MNO 6
PQRS 7	TUV 8	WXYZ 9
*	0	#

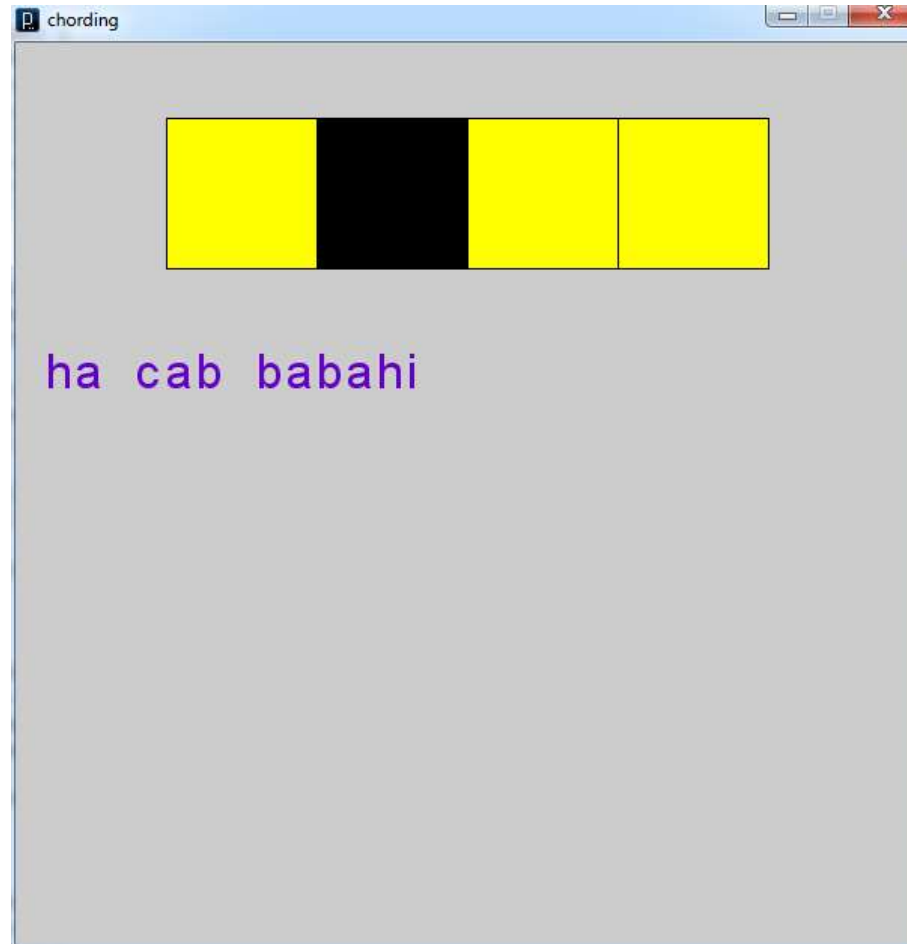
# Keyboard layouts

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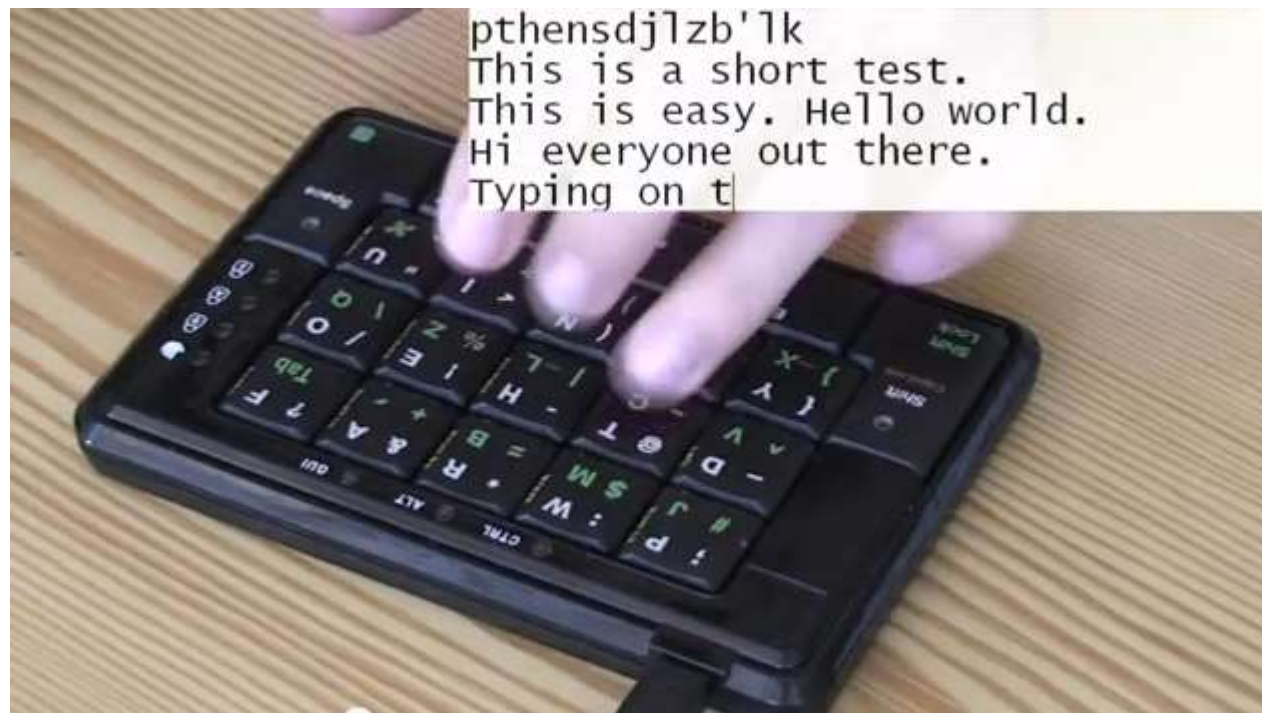
# Chording

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# Chording

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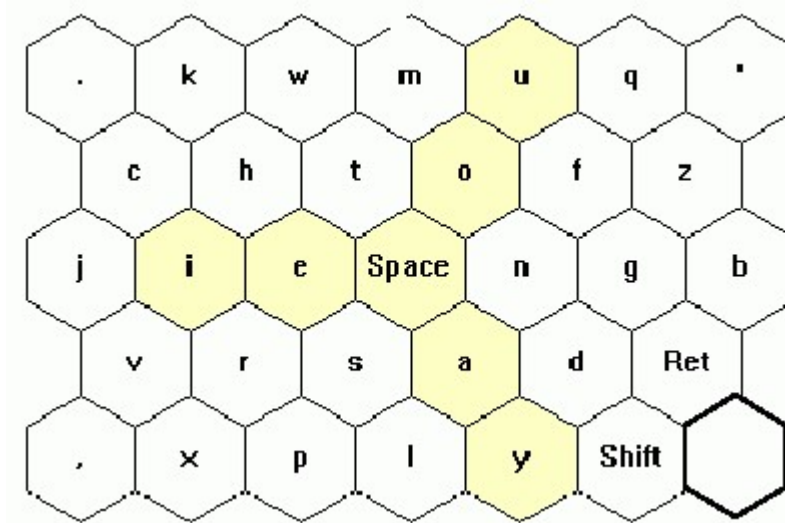
# On-screen keyboards

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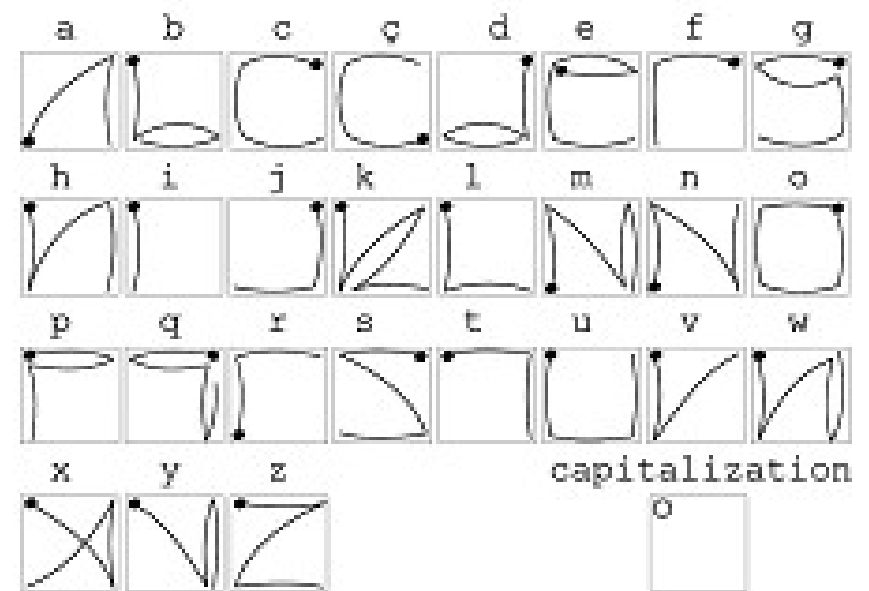


# Metropolis

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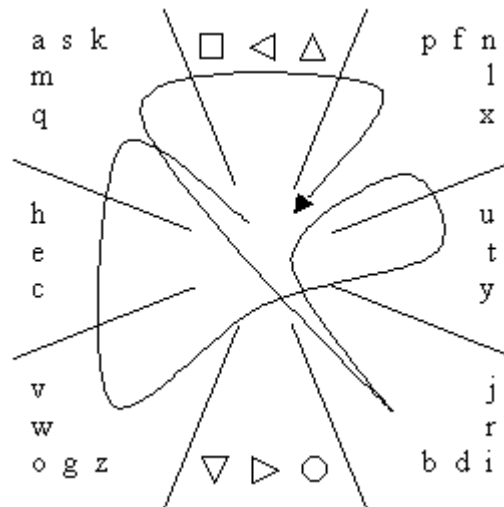


# EdgeWrite



# Quikwriting

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# Shark

