Pointer Network

\[ (x_1, y_1), (x_2, y_2), (x_3, y_3), (x_4, y_4), \ldots \]

coordinate of \( P_1 \)

\[ 4 \quad 2 \quad 7 \quad 6 \quad 5 \quad 3 \]
Sequence-to-sequence?
Sequence-to-sequence?

Of course, one can add attention.

Encoder

Decoder

Problem?
Pointer Network

Attention Weight

0.5

key

\(z^0\)

\(x_0\) \(y_0\)

\(h^0\) → \(h^1\) → \(h^2\) → \(h^3\) → \(h^4\)

\(x_0\) \(y_0\) → \(x_1\) \(y_1\) → \(x_2\) \(y_2\) → \(x_3\) \(y_3\) → \(x_4\) \(y_4\)
Pointer Network

Output: 1

argmax from this distribution

What decoder can output depends on the input.

key

$z^0 \rightarrow z^1$

$x_1^1$

$y_1^1$
Pointer Network

Output: 4

argmax from this distribution

The process stops when “END” has the largest attention weights.

What decoder can output depends on the input.
Applications - Summarization

https://arxiv.org/abs/1704.04368
More Applications

**Machine Translation**

French: Guillaume et Cesar ont une voiture bleue a Lausanne.

English: Guillaume and Cesar have a blue car in Lausanne.

**Chat-bot**

User: X寶你好，我是庫洛洛

Machine: 庫洛洛你好，很高興認識你