

# Outline

## Morning program

- Preliminaries

- Text matching I

- Text matching II

## Afternoon program

- Learning to rank

- Modeling user behavior

- Generating responses

- Wrap up

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Maarten

Alexey

Bhaskar

Christophe

Mostafa

Tom

## Maarten

### IR

Keep asking how NNs help us get closer to “getting the right information to the right people in the right way”

### Away from supervision

Train deep models based naturally occurring “pseudo labels” or interactions

### Autonomy

Focus on solutions that are increasingly autonomous—with that comes the need for transparency: models that are able to offer explanations of their decisions

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## Alexey

**NLP vs. IR**

A lot of progress on **short text** matching was done in **NLP community**.  
Should **IR community** be focused on **long texts**?

**Predict → Understand → Simulate**

Neural networks lead to **state-of-the-art** results on **prediction tasks**.  
We **understand** some of the models' internal workings. But **not all**.  
How well can we **simulate** user behavior remains an **open question**.

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## Bhaskar's notes

### Library or Librarian?

When you learn representations of text - you are encoding real-world knowledge into your model (e.g., “us president” is related to “obama”). How much knowledge should your model encode? Is your model a *library* of knowledge, or a good *librarian* capable of working with incomplete information? What's the best trade-off?

### Hammer or Lens?

Neural IR research shouldn't be all about trying shiniest new neural models for IR. If you use DNNs as a *hammer*, every problem will look like a nail. These new models should also be a *lens* through which we grow our understanding of IR fundamentals.

### Neu-IR'17 workshop

For more discussions, please come to the workshop on Friday.

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## Christophe's thoughts

### Unsupervised learning as a first-class citizen

Learning complicated models from query/relevance pairs is great, but let's try to figure out how well we can do without them.

### Occam's razor

Do we really need those 10,000 extra parameters or 10 hidden layers?

### Is the hype real? — or will the bubble burst?

We've been doing fine without deep learning for a long time. Skepticism is healthy, but only as long as it doesn't kill innovation.

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## Mostafa

### Remember the past and think about tomorrow

We have a really nice set of matured solutions and deep understanding of problems for many IR tasks. Ignoring everything we have is probably not a good idea. Let's keep in touch with what we achieved so far while developing new models.

### Reproducibility

IR community is always proud of being concerned about reproducibility. It is actually getting more important with DNNs to keep the position of this concern in our mind.

### Do the math!

Getting good results would be awesome if your model is also theoretically justified.

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## Tom

## What have the new methods brought us

- ▶ human-computer natural language communication

## Biggest current challenges

- ▶ training material
- ▶ consistency
- ▶ long-term dependencies
- ▶ evaluation
  - ▶ naturalness?
  - ▶ tone of voice?
  - ▶ on-topic-ness?

## New directions

- ▶ deep reinforcement learning
- ▶ new twists
  - ▶ Attention is all you need [Vaswani et al., 2017]?
- ▶ GANs
- ▶ Your next idea...?!?