MTAT.06.055
Machine Translation

Practice Session 1: System Setup

Plan for today

- Logistics
- MT frameworks
- System setup
- Sequence-to-sequence models
- Train a sequence copy model
- Apply the trained model
- ...

Logistics

TARTU NLP

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Communication: piazza.com/ut.ee/spring2020/mtat06055

No office hours, message me to arrange a meeting

Wed 16:15, Delta 2034: exercises, troubleshooting, homework review, project support

4 homeworks + project

Good news

Plenty of NMT frameworks:

Name	**DL framework**	**Developed by**
OpenNMT	PyTorch / TensorFlow	Harvard NLP, SYSTRAN
Marian	(C++)	Microsoft Translator
Fairseq	PyTorch	Facebook AI
Nematus	TensorFlow	Edinburgh NLP
Sockeye	MXNet	Amazon

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Installing Sockeye

(1. Create conda virtual environment:)

```
conda create --name mtcourse python=3.6
```

(2. Activate the new environment:)

```
conda activate mtcourse
```

3. Install NumPy:

```
pip install numpy==1.14.0
```

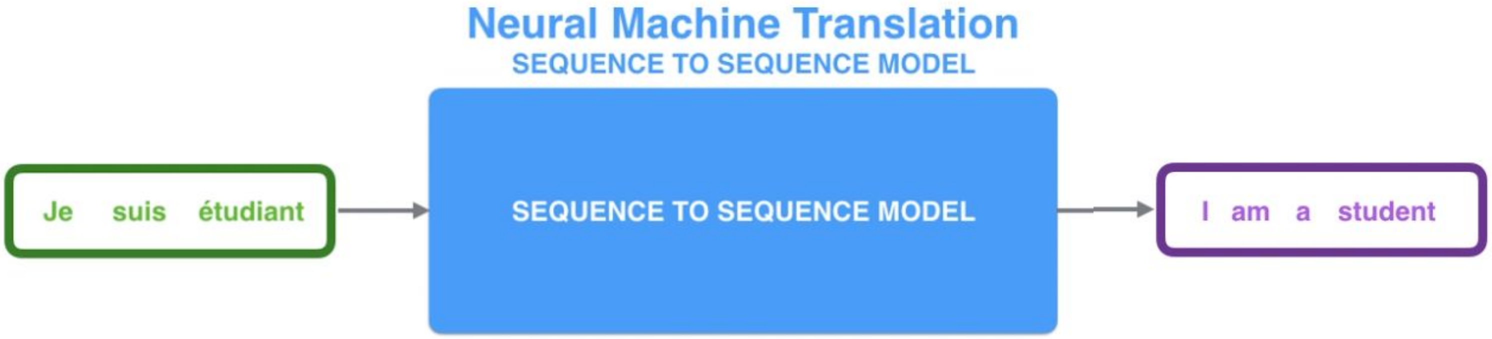
4. Install Sockeye:

```
pip install sockeye
```

5. Print Sockeye training help message:

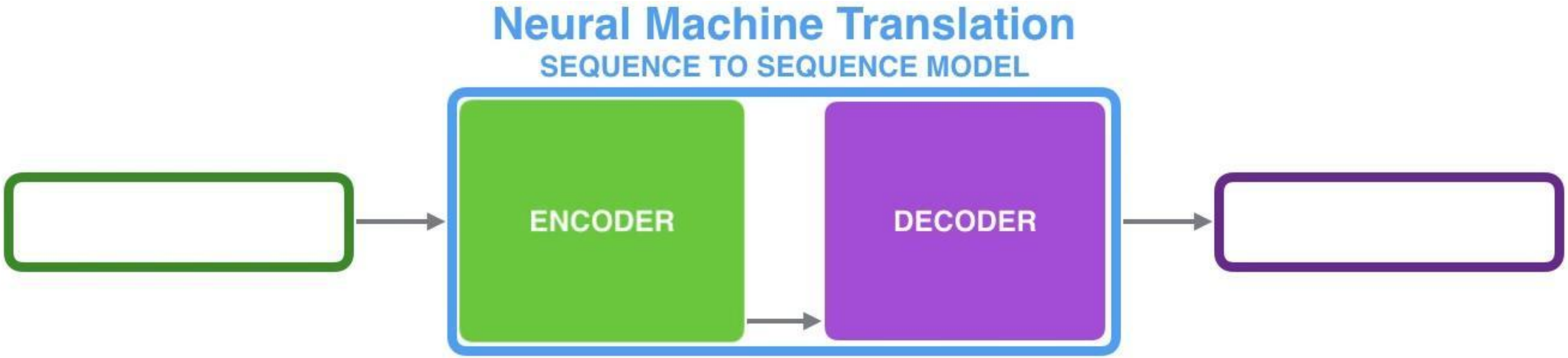
```
python -m sockeye.train -h
```

Sequence-to-sequence


Neural Machine Translation
SEQUENCE TO SEQUENCE MODEL
Je suis étudiant
SEQUENCE TO SEQUENCE MODEL
I am a student

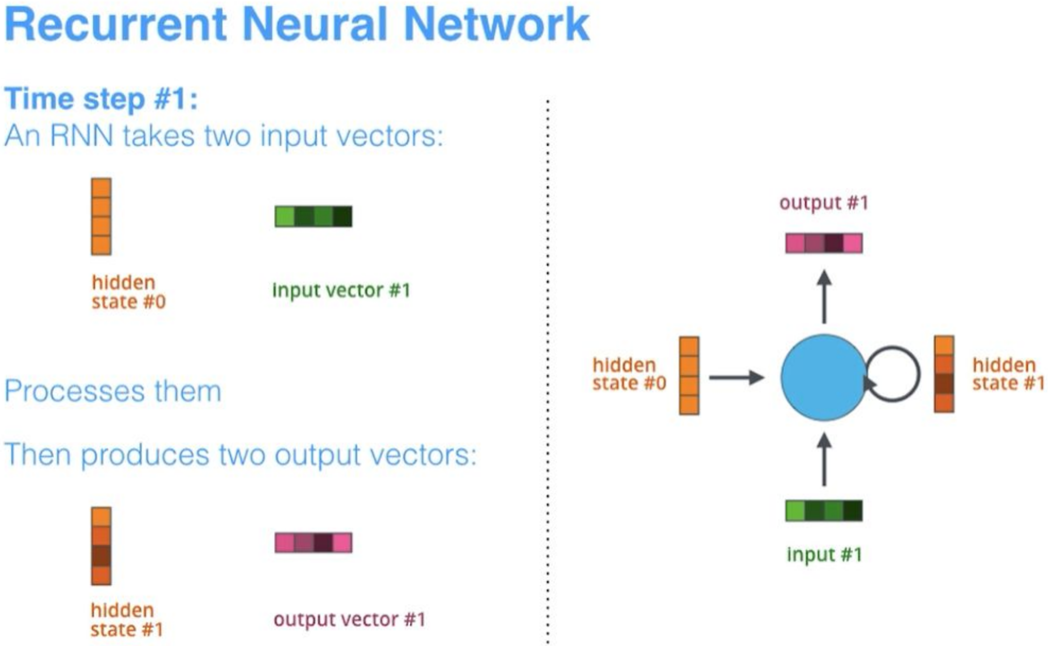
http://jalammar.github.io/visualizing-neural-machine-translation-mechanics-of-seq2seq-models-with-attention/

Sequence-to-sequence



https://jalammar.github.io/images/seq2seq_4.mp4
http://jalammar.github.io/visualizing-neural-machine-translation-mechanics-of-seq2seq-models-with-attention/

Sequence-to-sequence



Recurrent Neural Network

Time step #1:
An RNN takes two input vectors:

Processes them

Then produces two output vectors:

http://jalammar.github.io/visualizing-neural-machine-translation-mechanics-of-seq2seq-models-with-attention/

Let’s train a model

See notebook

How to add your env to jupyter notebook/jupyter lab:

```
conda activate mtcourse
conda install ipykernel
ipython kernel install --user --name=<some_name>
```

Installing Sockeye (if you have a GPU)

(1. Create conda virtual environment:)

```
conda create -n mtcourse python=3.6
```

(2. Activate the new environment:)

```
source activate mtcourse
```

3. Download requirements file (`${CUDA_VERSION}` can be `80` (8.0), `90` (9.0), `92` (9.2), or `100` (10.0)):

```
wget
https://raw.githubusercontent.com/awslabs/sockeye/master/requirements/requirements.gpu-cu${CUDA_VERSION}.txt
```

4. Install Sockeye

```
pip install sockeye --no-deps -r
requirements.gpu-cu${CUDA_VERSION}.txt
```

5. Remove requirements file

```
rm requirements.gpu-cu${CUDA_VERSION}.txt
```