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Tutorial: Fake News Detection (FND) with Deep Learning/ BERT on GPUs

Objective:

Train a BERT model on Alliance's Narval GPU nodes for fake news classification.

Sections:

1. Environment Setup

Load Modules:

```
module load python/3.10 cuda/11.7
pip install transformers torch
```

2. Python Code (`bert_train.py`)

```
from transformers import BertTokenizer, BertForSequenceClassification
import torch

tokenizer = BertTokenizer.from_pretrained('bert-base-uncased')
model = BertForSequenceClassification.from_pretrained('bert-base-uncased', nu
m_labels=2)
```

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```
# Example training loop (simplified)
inputs = tokenizer("This is a fake news article.", return_tensors="pt")
labels = torch.tensor([1]).unsqueeze(0)  # 1 = fake
outputs = model(**inputs, labels=labels)
loss = outputs.loss
loss.backward()
```

3. GPU Job Script (`gpu_job.sh`)

```
#!/bin/bash
#SBATCH --gres=gpu:1
#SBATCH --time=3:00:00

python bert_train.py
```

4. More Resources:

- Alliance Wki