MedNLP Rad
RadNLP: Natural Language Processing for Radiology
NTCIR-18 kickoff meeting
Yuta Nakamura, MD PhD, The University of Tokyo Hospital
1. TL;DR (one-page introduction)
2. Background
3. About RadNLP task
TL;DR (one-page introduction)

- **Multi-label classification** task to predict lung cancer stage from radiology reports
- We enhance our datasets from the previous NTCIR-17
1. TL;DR (One-page introduction)

2. Background

3. About RadNLP task
Background

- Roughly, biomedical NLP has three major applications
- RadNLP contributes to **professional workflow**

**Professional workflow**
- Clinical records
- Inside hospital
  - Professional lexicon
- Outside hospital
  - Professional lexicon

**Research**
- Articles

**Interactions with laypeople**
- Chatbot, social media, telemedicine etc.
Background

• Lung cancer has different optimal treatments depending on its stage (degree of progression)
Background

• Stage is determined in combination of T, N, and M categories

T: primary tumor size and extension
  • How many mm?
  • Extending to where?

N: metastasis to lymph nodes
  • To what lymph nodes?

M: metastasis to distant organs
  • No/Single/multiple?
Background

- **Radiology reports** are rich in information related to staging
- However, **stage is rarely specified** in radiology reports

![Radiology report](Lung_cancer_image)

- **T1b** Size in 12mm
- **T3** Satellite lesion
- **T4** Chest wall invasion
- **N3** Bilateral hilar lymph node metastasis
- **M0** No distant metastasis
Background

- We continue this topic from NTCIR-17
- Even with LLMs, we had large room for improvement
1. TL;DR (One-page introduction)
2. Our past task series
3. About RadNLP task
Dataset (new feature is underlined)

- NTCIR-17: 243 Japanese reports
- NTCIR-18: 243 Japanese and English reports
- No personal information
  - Created by diagnosing images on radiopaedia.org
Subtasks *(new feature is underlined)*

- **Subtask: sentence classification**
- **Metric: F1 score**

- **Main task: lung cancer staging**
- **Metric: Accuracy**

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Positive findings for T category

Positive findings for N category

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**Input**

(lung cancer radiology report)

**Answer**

(clinical stage)

T4N3M0
Annotation

- Follows the 8th edition of TNM classification rule by Union for International Cancer Control (UICC)
- Annotated by board-certified radiologist(s)
Organizers (★ radiologists)

• Co-chair

★Yuta Nakamura, MD PhD
The University of Tokyo Hospital

★Shouhei Hanaoka, MD PhD
The University of Tokyo Hospital

Eiji Aramaki, PhD
NAIST

Shuntaro Yada, PhD
NAIST

• Supporter

• ★ Koji Fujimoto, MD PhD (Kyoto University)
• ★ Kluckert Jonas, MD PhD (Zurich University)
• ★ Michael Krauthammer, MD PhD (Zurich University)
Schedule plan

- Jul 2024
  - Release of the training & validation sets
- Nov 2024
  - Release of the test set
  - Participation registration closes
- Jan 4, 2025
  - Submission deadline of the test predictions
- Feb 1, 2025
  - Score return
Contact

- radnlp@googlegroups.com
- Feel free to ask us any questions!