

NBA Lab Introduction

NBA Lab介紹



Department of Biomedical Imaging
and Radiological Sciences, NYCU



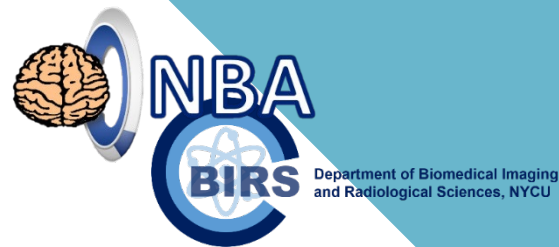
cflu.lab.nycu.edu.tw

陽明交大
NYCU

主持人
盧家鋒 教授

alvin4016@nycu.edu.tw

盧家鋒 教授
Chia-Feng Lu, PhD



學經歷

2002 - 2012
BSc & PhD



合作單位

放射線部
神經內、外科
心臟內科
復健醫學部
核子醫學部
腫瘤醫學部
精神醫學部



2014 - 2018

轉譯影像
研究中心、
執行長、醫學系
助理教授



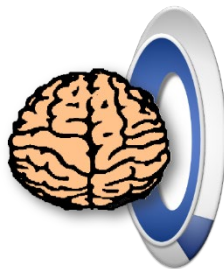
影像醫學部
神經內、外科

Multidisciplinary



Partnership

We work as a team.



NBA

Laboratory of NeuroImage Biomarker Analysis

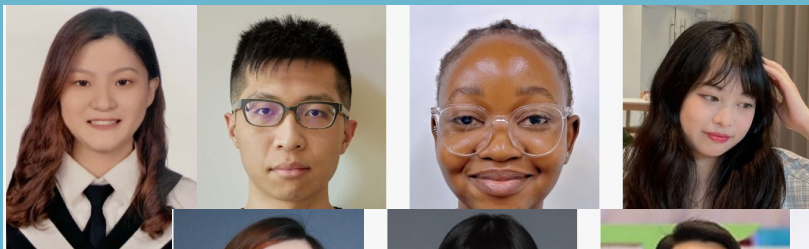
Who are we?

認識我們團隊

NBA Lab Team



- 1位 博士後研究員
- 7位 博士班研究生
- 5位 碩士班研究生
- 1位 大學部專題生



楊旻 Wei Yang, MS. Program

Graduate student, Department of Biomedical Imaging and Radiological Sciences, National Yang Ming Chiao Tung University
Research Fields: fMRI predictors of prognosis after IAT



郭玲 Ling Kuo, Ph.D. Program

Attending Physician, Division of Cardiology, Taipei Veterans General Hospital
Research Fields: Electrophysiology and Cardiovascular Imaging

Contact



林秉豐 Ping-Feng Lin, Ph.D.

Postdoctoral researcher, Department of Biomedical Imaging and Radiological Sciences, National Yang Ming Chiao Tung University
Research Fields: fMRI and DTI Study

陳俊儒 Chen-Jyun Ru, Ph.D. Program

Graduate student, Department of Biomedical Imaging and Radiological Sciences, National Yang Ming Chiao Tung University
Research Fields: Radiomics/Machine

郭佩薰 Pei-Hsuan Kuo, Ph.D. Program

Graduate student, Department of Biomedical Imaging and Radiological Sciences, National Yang Ming Chiao Tung University
Research Fields: MR Radiomics in

陳元琛 Yuan-Chen Chen, MS. Program

Graduate student, Department of Biomedical Imaging and Radiological Sciences, National Yang Ming Chiao Tung University
Research Fields: AI in medical imaging

- 陽明醫學系
(北榮放腫科、三總放腫科)
- 北醫醫學系
(雙和放腫科)
- 中山醫醫學系
(北榮心臟內科)
- 陽明醫放系
(國泰放射師技術主任)
- 中國醫醫放系
- 中山醫醫放系
- 高醫醫放系
- 義守醫放系

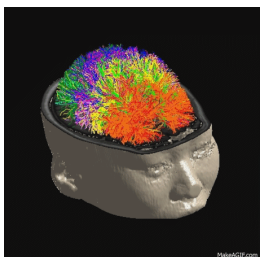
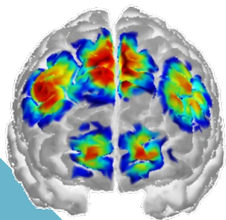


What are we doing?

我們的目標

三大研究主軸

- **臨床醫學影像整合人工智慧應用**
(MRI/CT/DBT、腦部腫瘤、肺癌、乳癌、放射手術/治療、心臟疾病)
- **腦功能磁共振影像與訊號分析技術**
(功能性磁共振造影、神經纖維重建、腦中風復健、腦血管畸形與病變)
- **臨床巨量追蹤資料庫建立與可視化分析**
(療效評估、復發預警、早期病症診斷、疾病進程分析)



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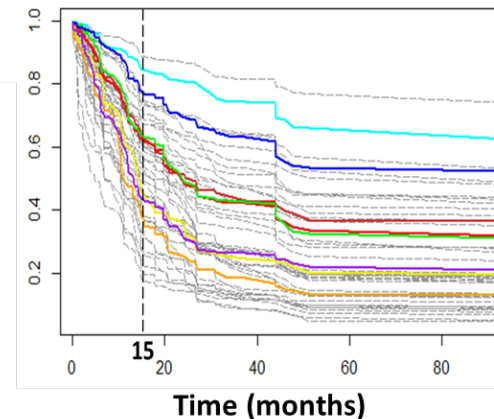
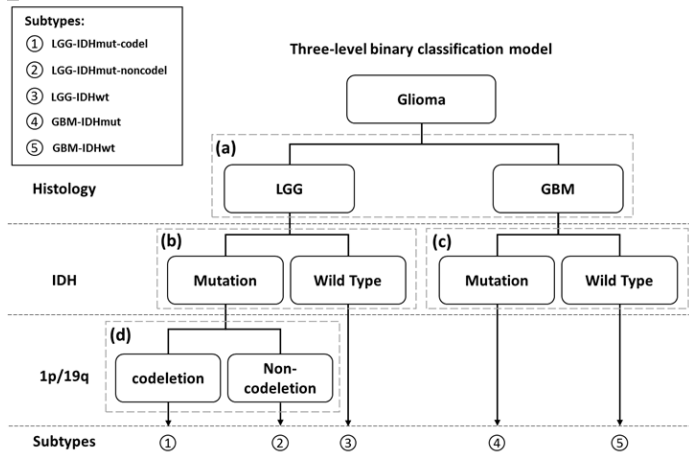
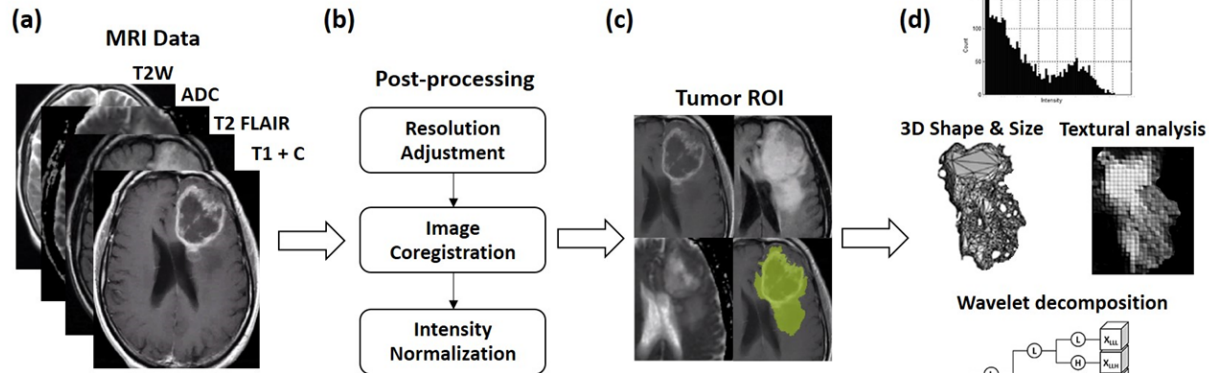


臨床合作單位

放射線部
神經內、外科
心臟內科
復健醫學部
核子醫學部
腫瘤醫學部
精神醫學部



Assisting Diagnosis and Treatment of Cancer using Machine Learning and Radiomics on Cancer Imaging

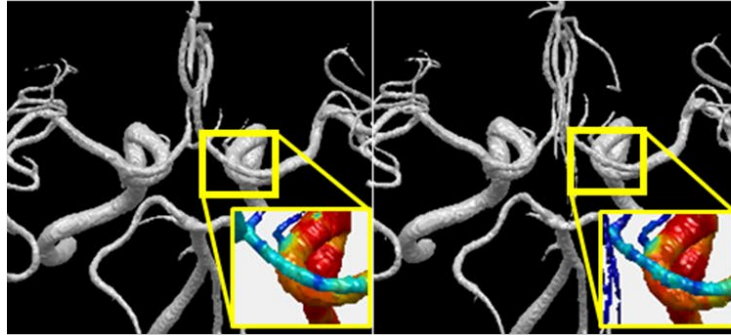


Lu et al, *Clinical Cancer Research*, 24(18):4429-4436, 2018.

Early Warning System for Intracranial Stenosis: A Serial MRA Study



Co-registration & comparison

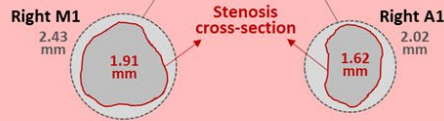


Automatic stenosis detection

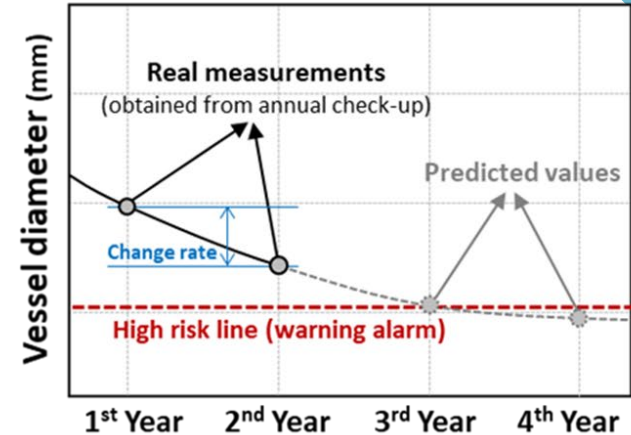
- Right M1 stenosis diameter: **1.91 mm**
- Right M1 average diameter: **2.43 mm**
- Right A1 stenosis diameter: **1.62 mm**
- Right A1 average diameter: **2.02 mm**



Equivalent circle of cross-section (based on the average diameter)



Early warning based on temporal change profiles

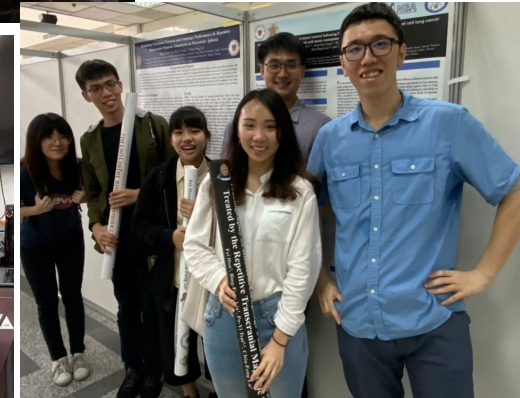




What can you learn?

交流&提升能力

We have the most friendly environment for learning, discussing and celebrating!



You learn here, you live here.

**陽明交大
NYCU**

Skills, Partnership/Supporting, Knowledge



陽明交大
NYCU



What can you achieve?

成就&成長

- 國際醫學影像研討會、原科院&分子影像年會
英文口報第一名、中文口報特優
- 國際最大磁共振造影年會ISMRM
獎學金、口頭報告一等獎(台灣唯一得獎者)、二等獎
- 科技部、教育部優秀博士生獎學金 每月4萬補助3-4年



**Summa
cum laude**

**magna
cum laude**

You work hard, you earn it!

High-Impact Publications



Precision Medicine and Imaging

Machine Learning-Based Radiomics for Molecular Subtyping of Gliomas

Chia-Feng Lu^{1,2,3}, Fei-Ting Hsu^{2,4,5}, Kevin Li-Chun Hsieh^{2,4,5}, Yu-Chieh Jill Kao^{2,5},
Sho-Jen Chen¹, Chao-Chin Chen¹

Check for updates

RESEARCH ARTICLE

IF=13.801, Q1

Disrupted Cerebellar Connectivity Reduces Whole-Brain Network Efficiency in Multiple System Atrophy

Chia-Feng Lu

Brain Stimulation

ELSEVIER

journal homepage: <http://www.journals.elsevier.com/brain-stimulation>

IF=9.698, Q1

Cortical inhibitory and excitatory function in drug-naïve generalized anxiety disorder

Cheng-Ta Li^a, Tung-Ping Su^a

Physical and Engineering Sciences in Medicine

<https://doi.org/10.1007/s13246-023-01234-7>

SCIENTIFIC PAPER

Check for updates

IF=9.184, Q1

Predicting survival after radiosurgery in patients with lung cancer brain metastases using deep learning of radiomics and EGFR status

Chien-Yi Liao¹, Cheng-Chi Wan-Yuo Guo^{3,7}, Ren-Shy

Radiotherapy and Oncology

ELSEVIER

journal homepage: www.thegreenjournal.com

IF=7.099, Q1

Original Article

Prediction of pseudoprogression and long-term outcome of vestibular schwannoma after Gamma Knife radiosurgery based on preradiosurgical MR radiomics

Huai-Che Yang^{a,b,1}, Chih-Chun Wu^{b,c,1}, Cheng-Chia Lee^{a,b,d}, Huai-En Huang^{e,f}, Wei-Kai Lee^e,
Wen-Yuh Chung^{a,b}, Hsiu-Mei Wu^{b,c}, Wan-Yuo Guo^{b,c}, Yu-Te Wu^{d,e,g}, Chia-Feng Lu^{e,g,*}

Check for updates

IF=6.901, Q1

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Build a Partnership You Can be Proud of

We Welcome You 😊

Chia-Feng Lu, alvin4016@nycu.edu.tw