

2025 IIIC 國際創新發明競賽報名資料

填寫範例

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中文作品名稱	磁共振造影之自動分析系統及其運作方法
英文作品名稱 English Title	AUTOMATIC ANALYSIS SYSTEM ON MAGNETIC RESONANCE IMAGING AND OPERATION METHOD THEREOF
競賽類別 Classification	02 Health/biotechnology/care 健康類
作品之專利資訊 Patent information	I56897
中文摘要	伽瑪刀放射外科(Gamma Knife radiosurgery, GKRS)是前庭神經鞘瘤(vestibular schwannoma, VS)的常見治療方式。這預測治療反應的能力對於患者諮詢和決策非常重要。作者開發了一個可以自動分割和區分 VS 囊性腫瘤和實體瘤成分的算法。還調查了每個成分的量化放射學特徵與 GKRS 後腫瘤反應之間的關聯。納入了 323 名接受 GKRS 治療的 VS 患者。經過預處理和生成預處理 T2 加權(T2W)/T1 加權對比(T1WC)影像，作者分割了 VS 通過使用模糊 C 均值聚類(fuzzy C-means clustering)將其分為囊性和固體成分。整個腫瘤的定量放射學特徵並提取其囊狀成分和固體成分。採用線性回歸模型來關聯臨床 GKRS 後 VS 的特定生長率(specific growth rate, SGR)的變量和放射學特徵。
英文摘要 Abstract	Gamma Knife radiosurgery (GKRS) is a common treatment modality for vestibular schwannoma (VS). The ability to predict treatment responses is critically important for patient consultation and decision-making. The authors developed an algorithm capable of automatically segmenting and distinguishing the cystic and solid components of VS tumors. They also investigated the correlation between each component's quantified radiological features and tumor responses following GKRS. A total of 323 patients with VS who underwent GKRS treatment were included. After pre-processing and generating pre-processed T2-weighted (T2W)/T1-weighted contrast

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	(T1WC) images, the authors segmented VS by using fuzzy C-means clustering to divide it into cystic and solid components. Quantitative radiological features of the entire tumor were extracted along with its cystic and solid components. A linear regression model was employed to correlate the variables of specific growth rate (SGR) post-GKRS in VS with the radiological features
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