

# Review of: "CNN-MRI Detection of Fatty Infiltration, Rotator Cuff and Infraspinatus Muscle Atrophy in Shoulder Pain Patients"

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Potential competing interests: No potential competing interests to declare.

Dear authors,

I have thoroughly reviewed your paper titled "CNN-MRI Detection of Fatty Infiltration Rotator Cuff and Infraspinatus Muscle Atrophy in Shoulder Pain Patients" and would like to commend you on your innovative approach to leveraging convolutional neural networks (CNN) in diagnosing shoulder conditions. Your work has the potential to significantly impact clinical practices. However, I believe the following enhancements could further strengthen your submission:

**Addition of a Comparison Section:** I recommend adding a dedicated section titled "Comparison with Existing Diagnostic Models for Shoulder Conditions." This section should:

- Introduce the importance of comparing your model with existing diagnostic approaches.
- Detail the methodology, feature extraction techniques, and performance metrics used in your model versus others.
- Discuss the unique aspects and benefits of your model, highlighting improvements in diagnostic accuracy, efficiency, and clinical applicability.
- Conclude with the potential impact of your model on clinical practices and future research directions.

**2. Expansion on the Use of Features:** Your paper could benefit from incorporating a wider array of features to enhance diagnostic capabilities. Specifically:

- **Advanced Texture Analysis Features:** Employ algorithms for detailed texture pattern analysis in MRI images, which could provide deeper insights into tissue changes.
- **Morphological and Functional Features:** Include data on muscle volume, shape, and elasticity to offer a more comprehensive evaluation of muscle health.
- **Temporal and Spectral Analysis:** For studies over time, these analyses could uncover early signs of muscle degeneration and additional information in the frequency domain.
- **Integration of Clinical Data:** Enhancing your model with patient-specific clinical information could lead to a more nuanced and accurate diagnostic tool.
- **Ensemble Learning Techniques:** Consider integrating multiple modeling approaches to leverage the strengths of various algorithms for improved accuracy and reliability.

Implementing these recommendations involves careful consideration and validation to ensure the enhancements

contribute meaningfully to your model's diagnostic performance. I look forward to seeing the further development of your work and its application in improving the diagnosis and treatment of shoulder conditions.

You can review these articles and use the related features for improvement of training your model:

- 1) Ghahfarrokhi, Sepehr Salem, and Hamed Khodadadi. "Human brain tumor diagnosis using the combination of the complexity measures and texture features through magnetic resonance imaging." *Biomedical Signal Processing and Control* 61 (2020): 102025.
- 2) Ghahfarrokhi, Sepehr Salem, et al. "Malignant melanoma diagnosis applying a machine learning method based on the combination of nonlinear and texture features." *Biomedical Signal Processing and Control* 80 (2023): 104300.

**Best.**