

*Supplemental Information*

# **Smartphone- and Cloud-based Artificial Intelligence Quantitative Analysis System (SCAISY) for SARS-CoV-2-specific IgG antibody Lateral Flow Assays**

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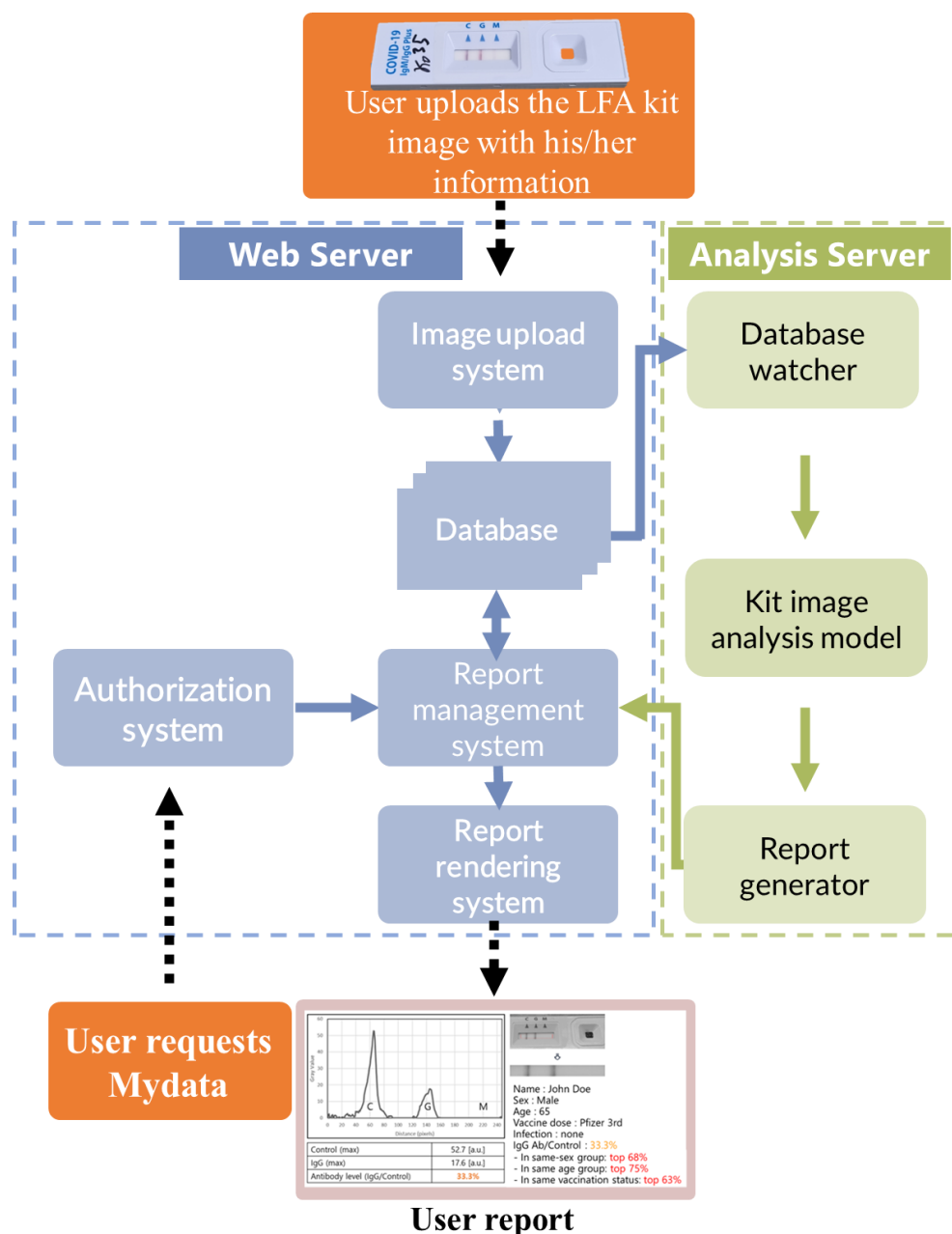
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**Fig. S1.** The system architecture of the platform that users upload their images to the server and receive a quantified result report. User images are sent to the server through the image upload system and then stored in the database. The analysis server watches the user's upload event. When a new image is uploaded, the result is derived through the deep-learning model, and then send to the web server. The results transmitted from the analysis server to the web server are stored in the database through the report management system and processed into a form to be displayed to users. By access using authorization system, user can check their earlier results.

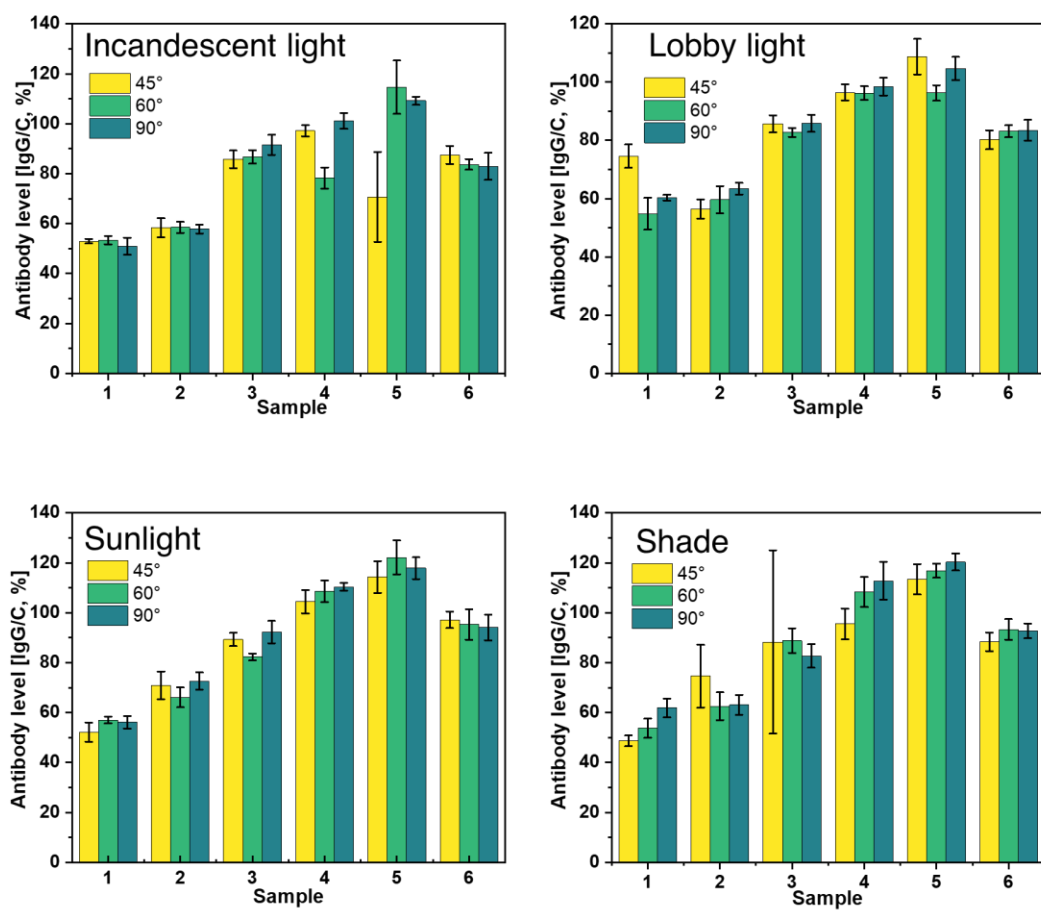


Fig. S2. The influence of the shooting angle on the result under different lighting conditions.

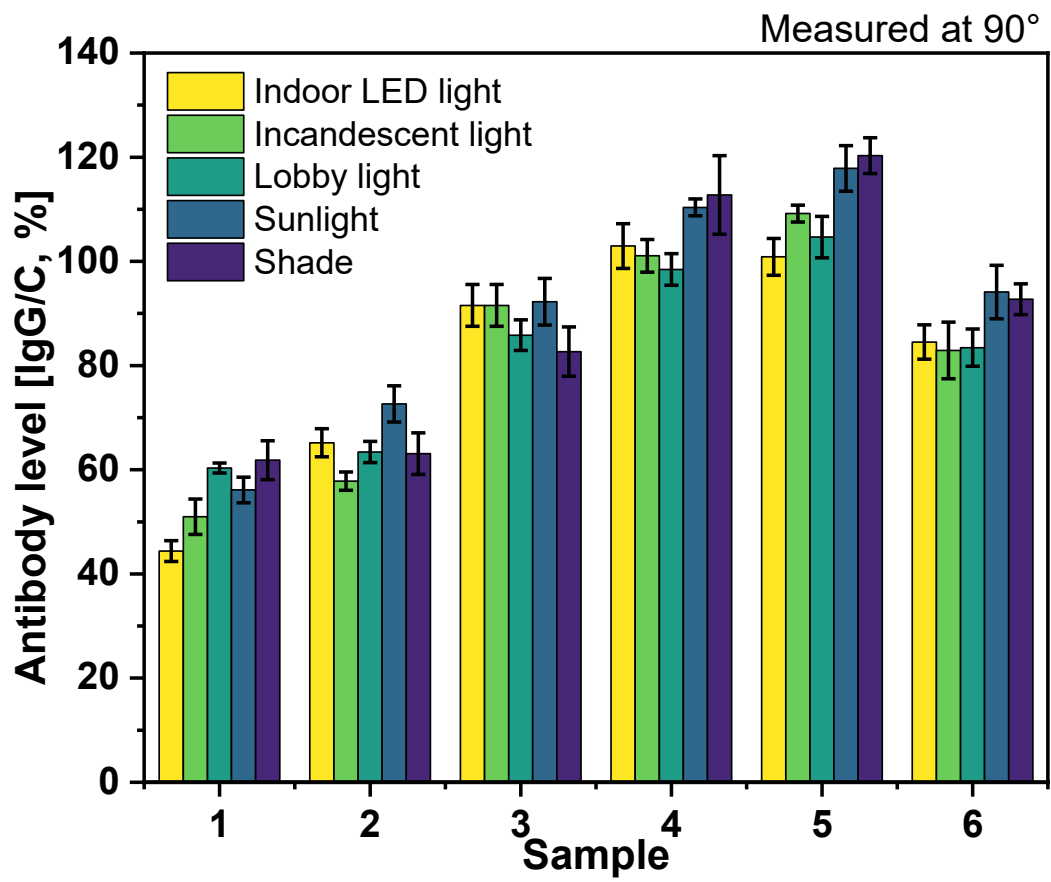
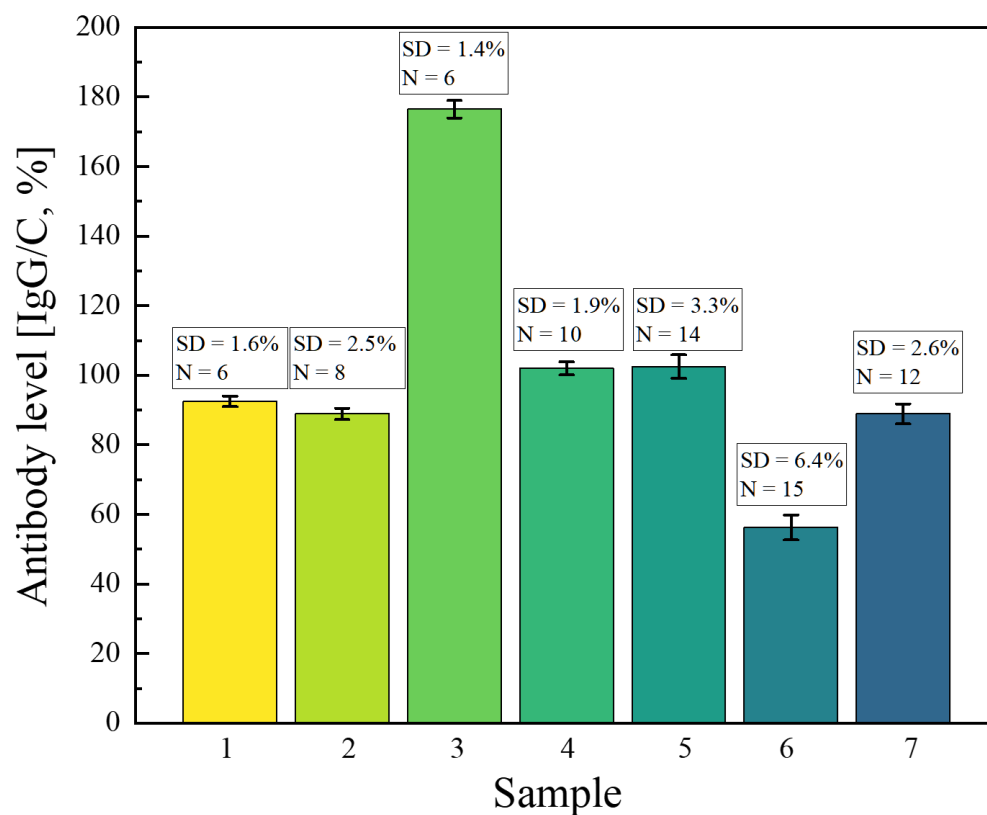
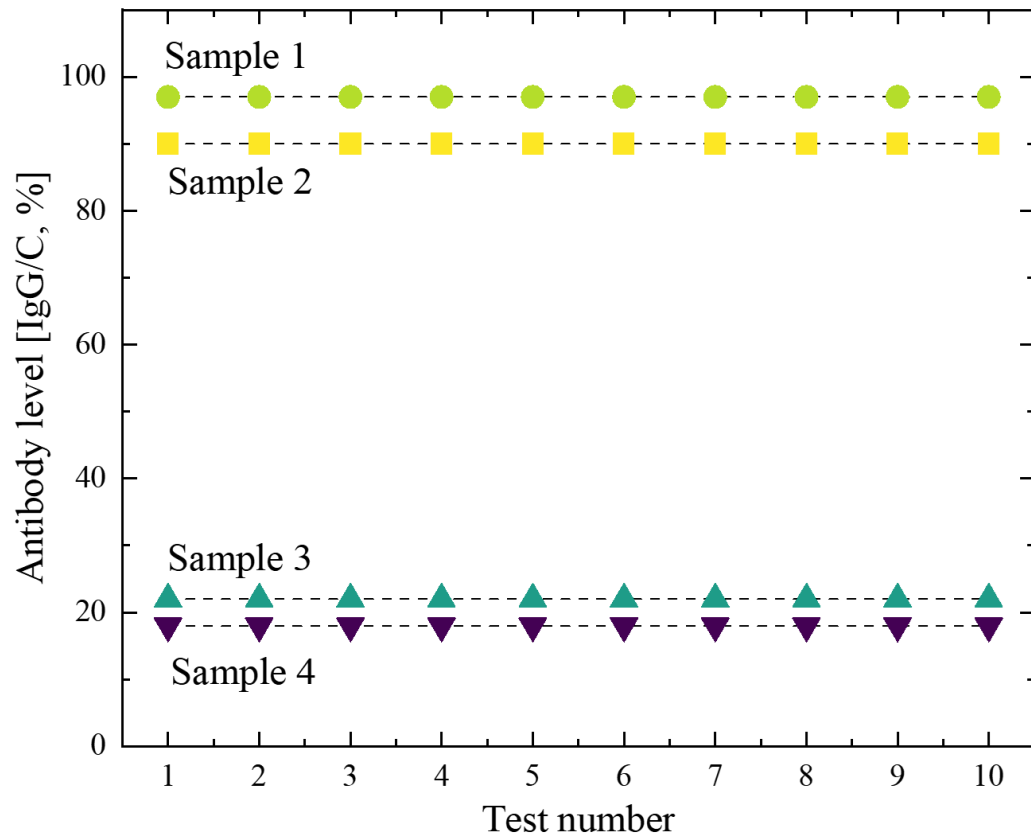


Fig. S3. A comparison of the different illumination situations at 90°



**Fig. S4.** The antibody levels and standard deviation of antibody levels for seven different samples.

Using a different image from the same LFT kit, we tested the reproducibility of our AI-based LFT measurement to ensure that the results were consistent, regardless of the image used. **Fig. S4** shows the antibody levels and standard deviations for seven different samples. N images were acquired for seven different samples for the reproducibility test and then transmitted to SCAISY to determine antibody levels. Under the same illumination and settings, the SD was less than 10%.



**Fig. S5.** The repeatability of results for four different samples. *Reproducibility and repeatability results*

To evaluate the precision of our SCAISY system, a repeatability study was conducted by comparing the absolute differences between the same image uploads at different time points for antibody level determination. Simply put, we need to determine whether our system always yields the same results when exposed to the same image (experiment). **Fig. S5** shows the repeatability of the results for four different samples. As expected, SCAISY provided similar results. This is impressive because it allows healthcare professionals to store digital photographs in databases and analyze the results later if needed.