

## Supplementary Material:

**Table S1:** LLM prompt components.

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| Prefix     | < User >[BEGIN TRANSCRIPT]\n                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Transcript |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Postfix    | \n[END TRANSCRIPT]\nThe Non-Technical Skills for Surgeons is a behavioral assessment tool for evaluation and improvement of behaviors in the operating room. The tool outlines four distinct categories of non-technical skills, each with corresponding elements that define the category.\nThese categories and their elements are as follows:\n- Situational awareness as evidenced by gathering surgery related information, understanding information, projecting and anticipating future state\n- Decision making as evidenced by considering options, selecting and communicating option, and implementing and reviewing decisions\n- Communication and teamwork as evidenced by establishing a shared understanding of and coordinating surgical team activities\n- Leadership as evidenced by setting and maintaining standards for the surgical team, coping with pressure, and supporting others\n\nYour goal is to complete the following tasks that compound upon themselves. Complete them in order and think carefully about your responses.\n1) Use the transcript of the simulated surgical environment to observe for demonstration of the non-technical skills within the surgical team as described by the Non-Technical Skills for Surgeons behavioral assessment tool. Apply the assessment tool to each of the participants, even if they are not playing the role of a surgeon.\n2) Check your response for accuracy. Make corrections if needed.\n3) Create a directional network based on the results of the assessment. Use the following rules for the creation of the directional network: The nodes of the network are the participants and the edges are the results from the assessment. The source node for each edge is the participant demonstrating the non-technical skill. The destination node for each edge is the other participant involved in the demonstration. The label for each edge is the non-technical skill being demonstrated. The description for each edge is a timestamp referencing where the demonstration occurs in the source transcript along with a short explanation. Create the network in a JSON format, suitable for importing into a network visualization tool.<   Assistant  > < think> |

**Table S2:** SUS questions in the post-questionnaire.

| No. | Question                                                                                   |
|-----|--------------------------------------------------------------------------------------------|
| Q1  | I think that I would like to use this system frequently.                                   |
| Q2  | I found the system unnecessarily complex.                                                  |
| Q3  | I thought the system was easy to use.                                                      |
| Q4  | I think that I would need the support of a technical person to be able to use this system. |
| Q5  | I found the various functions in this system were well integrated.                         |
| Q6  | I thought there was too much inconsistency in this system.                                 |
| Q7  | I would imagine that most people would learn to use this system very quickly.              |
| Q8  | I found the system very cumbersome to use.                                                 |
| Q9  | I felt very confident using the system.                                                    |
| Q10 | I needed to learn a lot of things before I could get going with this system.               |

**Table S3:** NTS questions in the post-questionnaire.

| No. | Question                                                                                                                       |
|-----|--------------------------------------------------------------------------------------------------------------------------------|
| Q11 | I believe continued use of this system would help improve my non-technical (teamwork, communications, decision-making) skills. |
| Q12 | I feel more confident in my non-technical (teamwork, communications, decision-making) skills after using this system.          |
| Q13 | The team performed well together in addressing the laparoscopic emergency.                                                     |

**Movie S1:** Multi-user Pneumothorax Simulation