PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Title page, p.1, where the study is identified as a comprehensive review. Section 3 clarifies that the review follows a systematic methodology based on PRISMA (2020).
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Abstract, p.1, which provides the study background, objectives, systematic methodology, key results, and main conclusions.
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Section 1. Introduction, p. 1-3, which explains the need for the review by highlighting the growth of research in the field, the limitations of previous surveys, and the importance of analyzing the ML-UWB.
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Section 1. Introduction, p. 1-3, which outlines the objectives of the review Section 3.1, p. 7, where one Main Research Question (MRQ) and five specific Research Questions (RQ1-RQ5)
METHODS			

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Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Section 3.2, p. 7-8, which specifies the inclusion criteria (IC1-IC3) and exclusion criteria (EC1-EC4)
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Section 3.3, p. 8, where the information sources are specified (Scopus and Web of Science). The searches covered studies published between 2020 and 2024, and all searches were completed prior to the final screening stage.
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Section 3.3, p. 7-8, where the complete search strategies for Scopus and Web of Science are reported, including the full Boolean queries and the publication-year limits (2020–2024).
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Section 3.4, p. 8–9, which describes the study selection process following the PRISMA stages (Figure 2).
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Section 3.5, p. 9-10, which describes the data extraction process. Extracted variables included bibliographic information, ML tasks, algorithms, evaluation metrics, datasets, and experimental scenarios.

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Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Section 3.1, p. 7, where the Research Questions define the outcome domains. Section 3.5, p. 9-10, describes the extracted performance outcomes, including RMSE, MAE, accuracy, and other task-specific metrics.
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Section 3.5, p. 9-10, which lists the additional variables extracted from each study, including publication year, ML task category, type of algorithm, evaluation metrics, experimental setup, and dataset characteristics.
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	N/A
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	N/A
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Section 4.2, p. 11, where studies are grouped for synthesis according to six functional tasks UWB-ML. This grouping follows the domains defined by the Research Questions.
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Section 3.5, p. 9-10, which explains that extracted data were organized into coded summary tables aligned with the RQs.
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Section 4, p. 10-32, where results are displayed using summary tables and figures (Figures 1, 3,

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			5, 7, 8). These visualizations support the descriptive synthesis.
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Sections 4 and 5, where a narrative synthesis structured around the RQs is conducted. No meta-analysis was performed due to methodological and metric heterogeneity across studies.
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Section 5, p. 32-34, where heterogeneity is explored qualitatively by comparing differences in performance across ML algorithms, tasks, datasets, and experimental setups.
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	N/A
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	N/A
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	N/A
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Section 3.4, p 8-9 and Figure 2. The process is described, starting with 688 identified records down to the final 169 studies included in the review.
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Section 3.4, p. 8-9, and Figure 2, which report the number of studies excluded at each stage and the reasons for exclusion: 165 records removed during title/abstract

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			screening, and 119 full-text reports excluded based on EC1-EC4.
Study characteristics	17	Cite each included study and present its characteristics.	Section 4, p. 10-32, where the characteristics of the included studies are synthesized. Details on ML tasks, algorithms, architectures, evaluation metrics, datasets.
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	N/A
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Section 4, p. 10–32. The review reports results in a general way. Individual effect estimates were not applicable.
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Section 4.3 and related subsections, p. 12-25, where studies are synthesized according to their functional tasks. Characteristics such as ML models, architectures, metrics, and datasets are summarized for each synthesis group.
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	N/A
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	N/A
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	N/A
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	N/A
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	N/A

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DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Section 5, p. 32-36, where the findings are interpreted in relation to the existing literature. The discussion synthesizes the trends identified across the Rqs.
	23b	Discuss any limitations of the evidence included in the review.	Section 5.5, p. 34, which discusses limitations of the included evidence, including UWB signal variability, limited dataset availability, inconsistencies in experimental setups, and challenges in model generalization.
	23c	Discuss any limitations of the review processes used.	Section 5.4, p. 33-34, which describes limitations of the review process, including the lack of standardized evaluation protocols across studies, the reliance on proprietary datasets, and constraints related to the inclusion criteria.
	23d	Discuss implications of the results for practice, policy, and future research.	Section 5.7, p. 34, which outlines the implications for future research and practical deployment.
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Not registered
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	No protocol prepared
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Not applicable

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Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Funding information is provided on p. 36, indicating that the review received financial support from the Generalitat Valenciana (CIDEXG/2023/17)
Competing interests	26	Declare any competing interests of review authors.	The Conflicts of Interest statement on p. 36 declares that the authors have no competing interests.
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	The Data Availability Statement on p. 36 indicates that no new data, code, or materials were generated for this review.

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