International Research Journal on Advanced Engineering and Management
https://goldncloudpublications.com
https://doi.org/10.47392/IRJAEM.2026.0235
e ISSN: 2584-2854
Volume: 04 Issue: 05
May 2026
Page No: 1592 - 1599

# Manage One AI: A Unified AI-Driven Productivity and Collaboration Platform for Intelligent Task and Workflow Management

*Arun Kumar[1], Adarsh Yadav[2], Abhinav Mishra[3], and Prasanna Kumar Pandey[4]*
*[1,2,3]Department of Computer Science and Engineering Babu Banarasi Das Institute of Technology and Management Lucknow, 226028, India.*
*[4]Assistant Professor, Department of Computer Science and Engineering Babu Banarasi Das Institute of Technology and Management Lucknow, 226028, India*
***Email ID:*** *ashu09774@gmail.com[1], yaduyanshiadarsh@gmail.com[2], am755938@gmail.com[3], prasanna.pandey99@gmail.com[4].*

## Abstract
*The rapid expansion of digital productivity tools has improved workplace efficiency but has also resulted in fragmented workflows. Users often need to switch between multiple applications for communication, task management, file storage, and scheduling, which disrupts focus and productivity. This paper presents Manage One AI, a unified web-based platform designed to integrate these functions within a single intelligent workspace. The proposed system combines a custom rule-based automation engine with selectively applied pre-trained transformer models for natural language processing. This hybrid approach enables AI-assisted task creation, intelligent scheduling, and automated workflow triggers while maintaining transparency in decision-making rather than relying entirely on complex black-box models. The system architecture utilizes a microservices-based backend to support modularity and scalability, along with a responsive React-based frontend that ensures accessibility across devices. An initial evaluation involving knowledge workers indicates improvements in task organization and a noticeable decrease in application switching. The results suggest that integrating productivity tools into a unified platform with transparent AI support can enhance user efficiency by reducing cognitive load and simplifying routine digital activities.*

***Keywords:*** *Human-AI Collaboration; Productivity Systems; Task Management; Web Application; Workflow Automation.*

## 1. Introduction
Modern knowledge workers operate within an increasingly complex digital environment. A typical workday requires interacting with multiple specialized tools, such as email platforms for communication, task management systems for organizing work, cloud storage services for document handling, and calendar applications for scheduling. Although each tool is effective for its intended purpose, the overall experience often becomes fragmented. Information tends to remain isolated across platforms, repetitive manual entries become common, and the constant need to switch between applications can disrupt concentration and reduce productivity [1]. This phenomenon, often referred to as "application sprawl," introduces friction that contradicts the intended purpose of productivity tools. Several existing solutions attempt to address this issue through direct integrations between applications or through conditional automation services based on predefined rules. While these approaches can provide limited assistance, they often require users to manually configure each automation and typically lack the flexibility needed to adapt to evolving work patterns [2]. In recent years, artificial intelligence has been introduced as a potential solution; however, many commercial systems treat AI as a black-box component that makes decisions without offering users sufficient transparency or

International Research Journal on Advanced Engineering and Management
https://goldncloudpublications.com
https://doi.org/10.47392/IRJAEM.2026.0235
e ISSN: 2584-2854
Volume: 04 Issue: 05
May 2026
Page No: 1592 - 1599

control. To address these challenges, this paper presents the design, development, and preliminary evaluation of Manage One AI, a platform created to unify common productivity functions within a single environment. The core idea behind the system is that meaningful productivity improvement is achieved not through fully autonomous AI decision-making [3], but through a balanced integration of user control, transparent rule-based automation, and targeted AI assistance. The platform offers a unified workspace that integrates tasks, notes, calendar events, and file attachments. Its intelligence layer interprets natural language input to enable rapid task creation, supports intelligent scheduling of work sessions, and suggests relevant documents or notes based on ongoing activities. The primary contribution of this research lies in proposing a system architecture that emphasizes user agency by ensuring that AI-generated suggestions remain explainable and can be easily modified or overridden. The main contributions of this work can be summarized as follows shows in table 1:

**Table 1 Summary of research contributions**

| Contribution | Description |
|---|---|
| Unified Productivity Platform | Integrates task management, scheduling, file organization, and collaboration |
| Hybrid Automation Architecture | Combines rule-based workflow automation with AI-assisted NLP |
| Empirical Evaluation | Four-week user study evaluating productivity improvements |

Within this framework, AI acts as an assistive component rather than a replacement for user decision-making. This study aims to address the following research questions: **RQ1:** Can a unified productivity platform reduce the perceived cognitive load associated with managing multiple digital tools? **RQ2:** To what extent can a hybrid approach combining AI and rule-based automation streamline routine workflow tasks while maintaining user control?. Despite the availability of numerous productivity tools such as task managers, communication platforms, and cloud storage services, knowledge workers often experience fragmented workflows due to the need to constantly switch between multiple applications. Existing automation tools provide limited integration and typically rely either on rigid rule-based systems or opaque AI-driven decision-making. This fragmentation increases cognitive load and reduces overall efficiency. Therefore, there is a need for a unified productivity platform that combines transparent automation mechanisms with intelligent AI assistance to streamline workflow management while preserving user control.

## 2. Literature Review

Research on digital productivity has long highlighted the issue of information fragmentation. Early studies in the field of personal information management (PIM) emphasized the difficulty individuals face when organizing and retrieving data spread across multiple file systems and software applications

- With the widespread adoption of cloud-based services, this challenge has become even more pronounced. Prior research on multitasking and context switching indicates that even short interruptions can significantly increase the time required to complete tasks and may also raise the likelihood of errors
- Switching between applications—such as moving from a task management interface to an email client—may appear minor, but it introduces a measurable “switching cost” that disrupts attention and workflow continuity. To address such inefficiencies, workflow automation tools such as IFTTT and Zapier were developed, enabling users to create simple trigger–action relationships between applications. Although these platforms provide useful automation capabilities,

International Research Journal on Advanced Engineering and Management
https://goldncloudpublications.com
https://doi.org/10.47392/IRJAEM.2026.0235
e ISSN: 2584-2854
Volume: 04 Issue: 05
May 2026
Page No: 1592 - 1599

studies have pointed out several limitations. Many users find it difficult to design, manage, or troubleshoot more complex automation rules, and these tools often operate separately from the core applications they connect

- As a result, the automation systems intended to simplify workflows can unintentionally add another layer of complexity for users to manage. Recent research has increasingly examined the role of artificial intelligence in improving productivity systems [6]. Intelligent assistants integrated into email or calendar platforms can recommend meeting times, highlight important messages, or remind users about pending tasks. Despite these advantages, a commonly cited concern is the "black-box" nature of many AI-driven systems. While users receive suggestions from the system, they are rarely provided with a clear explanation of how those recommendations were generated, which can lead to reduced trust or inappropriate reliance on automated decisions
- Studies in explainable artificial intelligence (XAI) emphasize that for AI systems to function effectively as collaborative tools, their outputs should be understandable and open to user evaluation or correction
- This requirement becomes especially important in productivity environments, where inaccurate AI recommendations—such as incorrectly prioritizing tasks—can directly affect real-world outcomes [7].

The Manage One AI platform builds upon these insights by adopting a hybrid system architecture. Rather than relying entirely on a single AI-driven automation framework, the platform incorporates a transparent and user-configurable rule engine to manage deterministic actions. For instance, a rule such as "when a task is marked as 'waiting for feedback,' move it to the 'Pending' folder" can be executed reliably through rule-based logic [8]. AI models, including fine-tuned versions of pre-trained transformer architectures for sentence similarity and intent classification, are used in a complementary role. These models assist in tasks such as analyzing task descriptions to recommend tags or estimate completion time, while the user retains full authority over the final decision [5]. Through this approach, AI functions as an assistive component that enhances user capability rather than replacing human judgment within the workflow management process shown in table 2 [4].

**Table 2 Comparative analysis of existing studies**

| Paper / Study | Year | Approach | Limitation | How This Differs |
|---|---|---|---|---|
| Kokate et al., IJRASET (AI Health Task Management System) | 2025 | AI-based task management system for healthcare workflows | Domain specific; uses simple ML models; not agent based or generalized | Proposed system focuses on multi-agent AI task orchestration applicable across multiple domains rather than healthcare-specific solutions. |
| Aluvihara et al AJAI (Importance of AI Tools in Modern Research and Innovation) | 2025 | Conceptual and analytical review of AI tools | Broad review; no focus on task or workflow agents | Moves from theoretical discussion to practical AI agent implementation for task management |
| Pandey et al., DLJ (AI Based Automation | 2023 | AI-driven automation | IT operations focused; not suitable for general | Proposed system targets general purpose task and |

International Research Journal on Advanced Engineering and Management
https://goldncloudpublications.com
https://doi.org/10.47392/IRJAEM.2026.0235
e ISSN: 2584-2854
Volume: 04 Issue: 05
May 2026
Page No: 1592 - 1599

| | | | | |
|---|---|---|---|---|
| Frameworks For IT Operations) | | frameworks for IT operations | workspace automation | workflow automation beyond IT operations |
| Brouzos et al., JIRS (Low Code Approach for Connected Robots) | 2023 | Low code platform for robotic system coordination | Robotics centric; not applicable to knowledge work automation | Focuses on digital knowledge work agents rather than physical robotic systems |
| Narang et al., IA Journal (AI Powered Knowledge Management Systems) | 2025 | AI-based knowledge management and retrieval systems | Knowledge centric; lacks workflow automation and agent orchestration | Extends KM into end-to end workflow automation with multi agent coordination |

## 3. Methodology

The development and assessment of Manage One AI followed a design science research (DSR) methodology consisting of three main stages: problem identification, artifact development, and evaluation. In the initial stage, semi-structured interviews were conducted with ten knowledge workers from different professional backgrounds, including software development, marketing, and academia. The purpose of these interviews was to identify the common challenges users face when managing multiple productivity tools. Insights obtained from these discussions helped shape the platform's primary features and influenced the overall design of the user interface [9]. During the second stage, the Manage One AI platform was developed through an iterative process. The technical implementation followed an agile development model with two-week sprint cycles. A technology stack was selected to support a scalable and modular architecture. The backend system was implemented using a microservices-based framework built with Node.js, where separate services handle user management, task processing, file storage, and workflow automation [10]. Each service operates within an isolated Docker container and communicates through a lightweight message broker. This structure ensures that a failure in one component does not affect the functionality of the entire system. The frontend was implemented as a single-page application using React, enabling a responsive interface that can operate efficiently across both desktop and mobile web browsers [11]. The final stage involved evaluating the effectiveness of the platform. A four-week field study was conducted with a separate group of fifteen participants who regularly relied on at least three different productivity applications in their daily workflow. After an onboarding session, participants were instructed to use Manage One AI as their primary tool for managing tasks and workflows throughout the study period. Data collection followed a mixed-method approach. Quantitative data was obtained through system logs that recorded user interactions, task completion patterns, and the frequency of context switching between platform modules such as tasks and calendar features [12]. In addition, participants completed questionnaires before and after the study that included a standardized instrument for measuring perceived cognitive load [13]. Qualitative insights were gathered through weekly semi-structured interviews and a final exit interview, focusing on user experience, trust in AI-generated suggestions, and the perceived value of the automation capabilities provided by the platform.

## 4. System Architecture

Manage One AI is designed as a cloud-native web

International Research Journal on Advanced Engineering and Management
https://goldncloudpublications.com
https://doi.org/10.47392/IRJAEM.2026.0235
e ISSN: 2584-2854
Volume: 04 Issue: 05
May 2026
Page No: 1592 - 1599

application with a strong focus on scalability and clear separation of responsibilities across system components. The overall architecture is organized into four main layers: the presentation layer, the API gateway, the microservices core, and the data layer. The presentation layer consists of a React-based frontend that interacts with the backend exclusively through a RESTful API gateway. This gateway serves as the single entry point for all client requests, managing authentication, routing requests to appropriate services, and applying basic rate-limiting policies [20]. By introducing this intermediary layer, the frontend remains decoupled from the internal microservices architecture, allowing backend components to evolve, scale, or be updated without directly affecting the user interface. The main application logic is implemented through a set of independent microservices. The Task Service is responsible for handling task-related information, including descriptions, priorities, deadlines, and status updates [19]. The Calendar Service manages scheduling operations and maintains synchronization between events. File-related functionality is handled by the File Service, which stores metadata for uploaded documents while delegating the actual file storage to a scalable external object storage system. At the center of the automation framework is the Workflow Engine, which maintains user-defined rules represented as conditional statements [18]. This engine continuously listens for system events generated by other services, such as task creation or file uploads. When an event satisfies the trigger conditions of a rule, the engine executes the corresponding action, such as generating a calendar entry or moving a task into a specified project category [14]. The workflow engine operates using deterministic logic, meaning its behavior is transparent and can be inspected or modified by users at any time. The AI Service functions as an independent microservice responsible for hosting the platform's machine learning models. Instead of relying on large, general-purpose models, the system utilizes smaller, fine-tuned transformer-based models to reduce computational overhead while maintaining performance [15]. For natural language task interpretation, a fine-tuned BERT-based model is employed to perform intent classification and entity extraction. For recommendation-related tasks—such as identifying notes or files relevant to a current task—the system uses a Sentence-BERT model to calculate semantic similarity between the task description and stored content. Importantly, the AI component operates strictly in a request–response manner. It does not autonomously modify system data; rather, it generates suggestions that are passed to either the frontend interface or the workflow engine. These suggestions are then presented to the user for confirmation [16]. For instance, when a user enters a new task description, the frontend sends the text to the AI Service, which returns recommended tags along with an estimated task duration. These suggestions appear as editable fields that the user may accept, modify, or ignore. This design ensures that AI assistance enhances productivity while maintaining user control over final decisions [17]. To ensure reliable system performance, additional design considerations were incorporated during development. Particular attention was given to fault tolerance and service isolation so that individual components could operate independently without affecting the overall system stability. Logging and monitoring mechanisms were also integrated to track system events and detect potential issues during runtime. These logs provide useful insights for both debugging and performance optimization. Furthermore, the modular architecture allows new services or features to be integrated with minimal modification to the existing system. This flexibility is particularly important for future expansion, such as incorporating additional AI models or supporting third-party integrations. By maintaining a loosely coupled architecture, the platform remains adaptable to evolving user requirements and technological advancements while preserving consistent system performance.

International Research Journal on Advanced Engineering and Management
https://goldncloudpublications.com
https://doi.org/10.47392/IRJAEM.2026.0235
e ISSN: 2584-2854
Volume: 04 Issue: 05
May 2026
Page No: 1592 - 1599

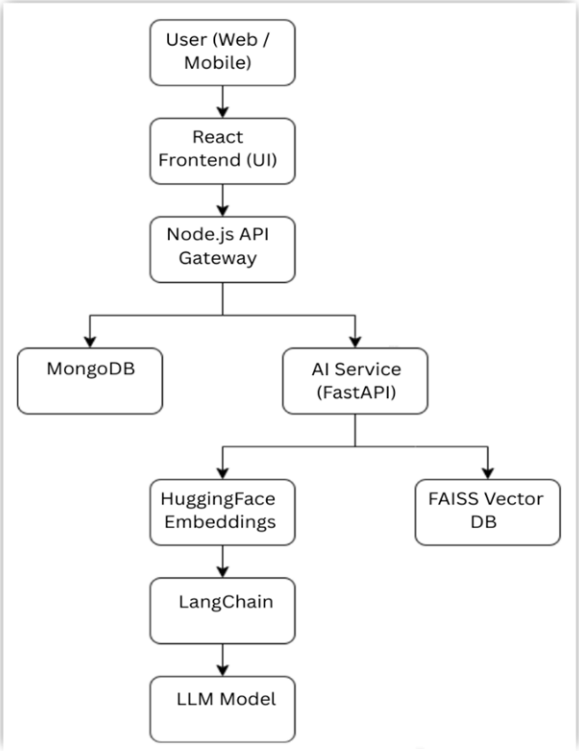


**Figure 1 System architecture of Manage One AI illustrating system components and data flow.**

## 5. Results And Evaluation

The four-week field study generated a substantial dataset that allowed us to evaluate the effectiveness of Manage One AI in relation to the research questions. Analysis of the pre- and post-study questionnaires revealed a noticeable decline in perceived cognitive load among participants. Using a 7-point Likert scale, the average response to the statement "I feel overwhelmed by the number of tools I need to manage my work" decreased from 5.2 before the study to 3.8 after the study. Although these findings are preliminary, they indicate that consolidating multiple productivity functions into a single platform (RQ1) may help reduce the mental effort associated with managing several separate applications. Additional evidence was obtained from system log analysis. The logs showed that the average number of context switches between different functional modules—such as moving from the task interface to the calendar—declined by approximately 40% in the final week of the study compared with the first week. Participants reported that features such as viewing calendar events alongside their task lists, or dragging note content directly into a task, reduced the need to open additional browser tabs or external applications. One participant explained, "I didn't realize how often I switched to my calendar just to confirm a time. Having it in the same view removed many small interruptions." With respect to the hybrid automation and AI-assistance approach (RQ2), participant feedback showed a more varied response. The rule-based automation system was consistently viewed as reliable and useful. Participants appreciated features such as automatically assigning tags to tasks created within specific project folders, which helped streamline routine organizational actions. In contrast, reactions to the AI-generated suggestions were mixed. The natural language processing capability for task creation was widely appreciated; users found it convenient to type a sentence such as "Meeting with John next Tuesday at 3pm about the budget" and have the system automatically populate fields like the title, date, and relevant tags.However, the content recommendation feature was used less frequently. The system attempted to recommend relevant files or notes based on task descriptions, but several participants reported that the suggestions were sometimes obvious or not sufficiently relevant. During exit interviews, some users indicated that they preferred attaching files manually rather than relying on automated recommendations. This feedback suggests that while AI-assisted data entry is generally helpful, recommendation features that interfere with established user workflows must achieve a higher level of precision and personalization to gain consistent trust. As one participant remarked, "It's often quicker for me to attach the file myself than to check whether the AI suggested the correct one." Although the study provides useful insights, several limitations should be acknowledged. The participant group was relatively small and limited to knowledge workers with prior experience using productivity tools. Future evaluations involving larger and more

International Research Journal on Advanced Engineering and Management
https://goldncloudpublications.com
https://doi.org/10.47392/IRJAEM.2026.0235
e ISSN: 2584-2854
Volume: 04 Issue: 05
May 2026
Page No: 1592 - 1599

diverse user groups may provide additional insights into the scalability and general applicability of the proposed system. Beyond individual productivity management, the proposed architecture can also be applied to enterprise collaboration platforms, project management systems, and AI-assisted digital workspaces where intelligent workflow orchestration is required.

## Conclusion

This study introduced Manage One AI, a unified productivity platform developed to address the fragmentation commonly experienced in modern digital work environments. The primary contribution of this research lies in proposing and evaluating a hybrid system architecture that clearly separates deterministic, user-defined automation from supportive AI functionality. In this design, AI models are used mainly to interpret user input and generate helpful suggestions, rather than performing autonomous actions. Such an approach allows the system to enhance productivity while ensuring that users retain control over their workflows. The results from the initial evaluation indicate that integrating tasks, calendars, and file management within a single interface can reduce context switching and lower the perceived cognitive effort involved in managing daily work activities. Participants also responded positively to the transparent rule-based automation features, which were considered reliable and easy to understand. However, the role of AI requires careful implementation. The findings suggest that AI performs most effectively when it assists with tasks such as interpreting natural language inputs or providing subtle recommendations, rather than acting as an independent decision-making agent. The relatively limited use of the AI-driven content recommendation feature highlights the importance of designing AI interactions that integrate smoothly into existing workflows and provide clear, immediate value to users. The proposed architecture also provides a foundation for future AI-powered collaborative work environments where intelligent agents assist users in managing complex workflows across multiple digital systems.

## Future Work

The results of this study suggest several directions for future development. One key area is improving the personalization of the AI recommendation system. Instead of relying on a general model, future versions could use online learning techniques that adapt to individual user behavior, allowing the system to learn which files or notes are typically associated with specific tasks over time. This would make the recommendation feature more relevant and useful for each user. Another promising direction is simplifying the automation process. Although the current rule-based engine is transparent, it still requires users to define rules using conditional logic. Future research could explore programming-by-demonstration, where the system learns workflows by observing repeated user actions. In addition, conducting a longer-term study with a larger and more diverse group of participants would help validate the findings and provide deeper insight into the long-term impact of unified productivity platforms on work efficiency.

## Acknowledgement

The authors express their sincere gratitude to the faculty members of the Department of Computer Science and Engineering for their valuable guidance and constructive feedback throughout this research. Special thanks are extended to the graduate student volunteers who participated in the interviews and evaluation study, whose insights greatly contributed to the development of Manage One AI. The authors also acknowledge the open-source communities behind React, Next.js, Node.js, FastAPI, and the Hugging Face Transformers library, whose tools and resources supported the technical development of this platform. This research received no external funding and was carried out using institutional computing resources provided by the Department of Computer Science and Engineering.

## References

[1]. R. Perera, et al., “Mapping AI automation at scale: Architectures and industry use cases,” Journal of Innovation and Knowledge, 2025.
[2]. S. Naik, et al., “Designing with multi-agent generative AI: Empirical insights from early

International Research Journal on Advanced Engineering and Management
https://goldncloudpublications.com
https://doi.org/10.47392/IRJAEM.2026.0235
e ISSN: 2584-2854
Volume: 04 Issue: 05
May 2026
Page No: 1592 - 1599

enterprise adopters," ACM Digital Library, 2024.

[3]. T. Schick, J. Dwivedi-Yu, R. Dessì, et al., "Toolformer: Language models can teach themselves to use tools," Advances in Neural Information Processing Systems (NeurIPS), 2023.

[4]. S. Yao et al., "ReAct: Synergizing reasoning and acting in language models," Proc. International Conference on Learning Representations (ICLR), 2023.

[5]. M. Abou Ali, et al., "Agentic AI: A comprehensive survey of architectures, benchmarks, and applications," SpringerLink, 2025.

[6]. X. Liu, et al., "From words to workflows: automating business processes from natural language," arXiv preprint arXiv:2404.05621, 2024.

[7]. V. Dibia, et al., "AutoGen Studio: A no-code developer tool for multi agent LLM applications," in Proceedings of EMNLP Demo, 2024. ACL Anthology, 2024.

[8]. W. Chen, Y. Su, J. Zuo, et al., "AgentVerse: Facilitating Multi-Agent Collaboration and Exploring Emergent Behaviors," arXiv preprint arXiv:2308.10848, 2023.

[9]. Z. Wu, C. Han, Z. Ding, Z. Weng, Z. Liu, S. Yao, T. Yu, and L. Kong, "OS-Copilot: Towards Generalist Computer Agents with Self Improvement," arXiv preprint arXiv:2402.07456, 2024.

[10]. G. Li, F. Hammoud, H. Itani, B. Khizbullin, and B. Ghanem, "CAMEL: Communicative Agents for 'Mind' Exploration of Large Language Model Society," arXiv preprint arXiv:2303.17760, 2023.

[11]. J. Park, J. O'Brien, C. Cai, M. Morris, P. Liang, and M. Bernstein, "Generative agents: Interactive simulacra of human behavior," Proceedings of the ACM CHI Conference on Human Factors in Computing Systems, 2023

[12]. Q. Wu, G. Bansal, J. Zhang, et al., "AutoGen: Enabling next-gen LLM applications via multi-agent conversation," arXiv preprint arXiv:2308.08155, 2023.

[13]. R. Tarafdar, "Human–AI collaboration in workflow optimization: A framework for hybrid decision systems in automation-heavy industries," International Journal of Scientific Research in Computer Science, Engineering and Information Technology, vol. 11, no. 1, pp. 3594–3613, 2025.

[14]. R. Pingili, "Generative AI unlocking adaptive workflow design," International Journal of Advanced Computer Science and Applications (IJACSA), 2025.

[15]. P. Kumar, "Agentic AI-driven enterprise architecture: A foundational framework for scalable, secure, and resilient systems," International Journal of Computational and Experimental Science and Engineering, 2025.

[16]. K. K. Kothapally, "Low-code integration platforms: Revolutionizing enterprise architecture through AI-driven development," International Journal of Scientific Research in Computer Science, Engineering and Information Technology, 2025

[17]. R. V. Narang and M. Chatterjee, "AI-powered knowledge management systems: A hybrid model for smart organizations," International Academic Journal of Innovative Research, vol. 12, no. 3, June 2025

[18]. J. Wei, X. Wang, D. Schuurmans, et al., "Chain-of-Thought Prompting Elicits Reasoning in Large Language Models," Advances in Neural Information Processing Systems (NeurIPS), 2022.

[19]. G. Kacheru, N. Arthan, and R. Bajjuru, "Artificial intelligence for low code and no-code development: Making non-developers developers," Formosa Journal of Multidisciplinary Research, 2024–2025

[20]. T. Brown et al., "Language Models are Few-Shot Learners," Advances in Neural Information Processing Systems (NeurIPS), 2020.