**1. Enhancing Efficient Study Plan for Student with Machine Learning Techniques**

**Nipaporn Chanamarn, Kreangsak Tamee**

1.      In this research, the authors conducted a study involving data preprocessing, modeling, and deployment to provide personalized study guidance for students to enhance their academic achievements. They used MATLAB 2015 for two main purposes:

·        CGPA Prediction with Neural Network (NN): They employed a Backpropagation Neural Network (BPNN) algorithm to predict CGPA. BPNN consists of three layers: Input Layer, Hidden Layer, and Output Layer.

·        Clustering with K-Means: K-Means clustering was used to group students into clusters based on their performance patterns.

2.      The research analysed real-world data from 300 students in a Computer Science curriculum, creating CGPA prediction models using Neural Network and clustering students into 7 groups based on grade point similarity using K-means. The study demonstrated high performance in CGPA prediction and identified three data patterns as self-guidelines for improving study achievement.

3.      Additionally, the study provided specific guidance for students based on their desired CGPA goals:

4.      1. For an average CGPA of 2.50, the student should aim for grades not less than the average in each subject.

5.      2. To achieve the maximum CGPA in the cluster, the student should aim for grades not less than the maximum CGPA.

6.      3. For the minimum CGPA in the cluster, the student should aim for grades not less than the minimum CGPA.

7.      The experimental results indicated improved study achievement for students, helping them work towards their ideal CGPA in graduation.

2. **Personalization in Real-Time Physical Activity Coaching using Mobile Applications: A Scoping Review F. Monteiro-Guerra, O. Rivera-Romero, L. Fernandez-Luque, and B. Caulfield**

Personalization in Real-Time Physical Activity Coaching using Mobile Applications: A Scoping Review F. Monteiro-Guerra, O. Rivera-Romero, L. Fernandez-Luque, and B. Caulfield Personalization in Real-Time Physical Activity Coaching using Mobile applications: A Scoping Review F. Monteiro-Guerra, O. Rivera-Romero, L. Fernandez-Luque, and B. Caulfield

A scoping review of 17 real-time physical activity coaching applications found that personalization strategies, particularly feedback and goal setting, are commonly used to promote physical activity. However, there’s a need to better incorporate behavior change theories and conduct rigorous evaluations. Gamification elements were prevalent, but underutilized game theories. The study also emphasized the potential for personalized coaching in specific populations and the importance of user-centered design. Overall, the research highlights the need for improved personalization in physical activity coaching applications for enhanced user engagement and effectiveness.

·        . Personalization Concepts

·        Feedback (FB)

·        . Goal Setting (GS)

·        Evaluation Methods

·        Persuasive Design Considerations

·        User Targeting (UT)

·        Inter-Human Interaction (IHI)

·        Adaptation (Ad)

·        Context Awareness (CA)

·        Self Learning (SL).

**3. Intelligent timetable schedular: comparison of genetic, graph colouring, heuristic and iterated local search algos**

The research paper on timetable scheduling in educational institutes discusses several applications and implications:

1. Educational Institutions: The primary application is within educational institutions, where efficient timetable scheduling is crucial for managing classes, examinations, and resources.

2. Timetable Coordination: It addresses the challenges faced by timetable coordinators and offers solutions to streamline the process.

3. Examination Timetables: The paper focuses on the creation of examination timetables, a critical aspect of educational management.

4. Semester Timetables: It also covers the scheduling of semester timetables, ensuring courses and resources are optimally allocated.

5. Algorithmic Solutions: The research explores the application of various algorithms, including Genetic Algorithm, Graph Colouring Algorithm, Heuristic Algorithm, and Iterated Local Search Algorithm, in the context of timetable scheduling.

6. Constraint Management: The paper discusses the application of constraint-based methods to manage constraints such as subject prioritization, staff allocation, and room allocation.

7. Fuzzy Time Window (FTW): The research briefly mentions the FTW approach, which categorizes subjects and uses fuzzy logic for scheduling effectiveness and satisfaction.

8. System Architecture: It outlines the system architecture and workflow for each algorithm, demonstrating their practical application.

9. Comparative Analysis: The paper compares the performance of different algorithms, providing insights into their feasibility and accuracy in various scenarios.

10. Case Study: The research applies these algorithms to a case study at SLIIT, offering real-world applications and results.

11. Automation: The primary application is the automation of timetable scheduling, reducing manual effort and minimizing errors and conflicts.

12. Optimization: The research aims to optimize the scheduling process, ensuring efficient resource allocation and conflict resolution.

The applications in this research paper have a direct impact on educational institutions, timetable coordinators, and the overall efficiency of scheduling processes in the academic context.

The paper also provides sample outputs of generated timetables.

·        Genetic and graph colouring, heuristic and iterated and local search algos. We were able to find

·        the best algorithm based on,

·        Running time of the algorithm

·        Genetic algorithm (GA) takes 25% of time

·        Graph Colouring Algorithm (GCA) takes 11% of time

·        Iterated local search algorithm (ILSA) takes 44% of time

·        Heuristic algorithm (HA) takes 20% of time

# 4.Analyzing and Predicting Students’ Performance by Means of Machine Learning: A Review

by [**Juan L. Rastrollo-Guerrero**](https://sciprofiles.com/profile/author/emNYT2FNU1FxOUJ1OVcrei9ZQ2U1ejB3anVRZkJSVHllVG1UOE9jOEhubz0=), [**Juan A. Gómez-Pulido**](https://sciprofiles.com/profile/13156) and [**Arturo Durán-Domíngue**](https://sciprofiles.com/profile/author/WXUrd1haZmlZaEkwQ0V1K0x0eHIydz09)

This study delves into the use of modern techniques for predicting students' academic performance and behavior. It **categorizes** the **techniques into Machine Learning, Collaborative Filtering, Recommender Systems, and Artificial Neural Networks**. These methods are applied to various objectives including:

·       predicting student dropout

·       academic performance

·       recommending activities and resources

·       understanding students' knowledge and behavior.

·       The research analyzes 64 recent articles and highlights the significance of these predictive techniques in education. It offers valuable insights for educators and researchers aiming to improve curriculum design, academic support, and reduce dropout rates.

5. **NUDGE - A DAY PLANNER ANDROID APPLICATION USING ARTIFICIAL INTELLIGENCE**

**By Ms. MADHUMITHA.R1 , Ms. ADITHI.G1 , Mrs. RAMYA DEVI.R2**

Nudge allows users to set location-based reminders and syncs with their Gmail messages to automatically set calendar reminders. The app utilizes GPS and Google Maps for location tracking and offers a range-based alarm system to alert users.

The system described in the paper provides reminder services on Android, with foreground operations and background services managed using an SQLite database.

1. Location-Based Alarm Module The application converts the location into latitude and longitude coordinates and stores all user-provided information in an SQLite database

2. Gmail-Based Alarm Module: Users can sync their Gmail accounts with the Nudge application and the OS calendar on their mobile phones. If the user receives an unread email with a date related to a meeting or event, the Nudge application extracts the date and sets a reminder in the OS calendar.

**6. A Personalized Time Management Assistant: Research Directions**

**Pauline M. Berry, Melinda Gervasio, Tomas Uribe, Martha E. Pollack**

The research paper discusses the development of a Persistent Time Management (PTIME) framework, specifically a scheduling assistant capable of learning and adapting to user preferences over time. The PTIME framework integrates various modules, including a controller capturing user interactions, preference learning for evolving system preferences, advisability for direct user instructions, constraint reasoning for unified plan representation, personalized reminder generation, and adjustable autonomy to modulate control based on user trust. The paper outlines the functional architecture of PTIME and its capabilities, such as handling disjunctive temporal constraints, collaborative scheduling, and learning adjustable autonomy policies. The research emphasizes the importance of user collaboration, continuous learning, and a context-sensitive, hierarchical approach for effective time management. The paper concludes with ongoing research directions, including hybrid constraint satisfaction, negotiation process design, and learning adjustable autonomy policies. Overall, PTIME aims to be a dynamic and adaptive scheduling assistant, providing personalized support while allowing users to retain control over decision-making.

**7. Everyday planning: An analysis of daily time management**

**Daniel J. Simons, Kathleen M. Galotti**

The study conducted by Daniel J. Simons and Kathleen M. Galotti aimed to assess planning, prioritization, and completion of daily activities among college students. The researchers examined how individuals decide which goals are most important, how they prioritize tasks, and how many goals can realistically be completed in a day. The study involved 88 undergraduate students who listed and prioritized their goals for the next day, and two days later, reported their accomplishments.

The researchers identified five components of planning based on previous work: (1) recognizing potential goals, (2) mentally simulating means of achieving goals, (3) identifying conflicts among goals, (4) revising plans to reduce conflicts, and (5) executing the plan. The focus was on everyday planning processes involved in problem-solving.

The results showed that self-reported good and poor planners did not differ significantly in the proportion of goals completed or in sensitivity to goal priority. However, differences were found in the definitions of planning provided by the participants. Good planners tended to define planning in terms of achieving satisfaction, organizing activities, and breaking down goals into manageable subgoals. On the other hand, poor planners were more likely to associate planning with making predetermined decisions and reducing stress.

The study also explored gender and year-in-school differences in the conceptualization of planning. Men tended to see planning as a mnemonic strategy, while women viewed it more in terms of organization. Additionally, conceptions of planning changed with time or practice, suggesting that planning behaviors and perceptions evolve over the course of one's academic experience.

In a follow-up study, the researchers attempted to replicate their findings using a more precise measure of goal completion, with similar results. Despite differences in how individuals conceptualize planning, behavioral differences in terms of goal completion were not consistently observed.

The researchers suggested that the short duration of the time scheduled and the possibility of a sample of above-average planners might have contributed to the lack of behavioral differences. They also proposed that allowing subjects to schedule a longer time frame or comparing different types of goals might reveal more distinct behavioral patterns between good and poor planners.

In summary, the study investigated daily planning processes among college students, highlighting the importance of understanding how individuals conceptualize and execute plans in their everyday lives.

**8. An intellectual approach to design personal study plan via machine learning**

**Shiyuan Zhang, Evan Gunnell, Marisabel Chang, Yu Sun**

The paper titled "An Intellectual Approach to Design Personal Study Plan via Machine Learning" presents a mobile application designed to customize study plans for improving vocabulary, especially for standardized tests like SAT and ACT. The application utilizes machine learning models, including Support Vector Machine (SVM), Linear Regression, and Polynomial Regression, to predict and optimize various aspects of the study plan.

The main challenges addressed in the paper include deciding suitable study methods for learners, designing effective study plans, and training machine learning models with a relatively small dataset. The proposed solution involves using an intelligent approach with different machine learning algorithms to create personalized study plans.

The mobile application, named Memelish, incorporates features such as a search engine for vocabulary, an editing page for creating study memes, and a study list page displaying words and memes. The experiments conducted assess the accuracy of machine learning models in predicting vocabulary ordering, difficulty distribution, and optimal typing distribution for studying.

The results indicate that Linear Regression consistently outperforms SVM and Polynomial Regression in the experiments. Linear Regression achieved the highest accuracy, particularly in predicting difficulty distribution. The paper concludes by discussing related work and suggesting future directions, including gathering more data from high school students to further improve the machine learning models.

In summary, the paper introduces an innovative approach using machine learning to enhance vocabulary learning through a mobile application, demonstrating the effectiveness of Linear Regression in predicting and optimizing study plans.

**9. Smart Routine Planner using Machine Learning**

**Prof. Bhagya K, Jesly P Johnson, Anurag Sharma, Sonia Stalance, Apurva A**

The literature survey encompasses various approaches to personal productivity and scheduling systems. Here's a brief summary of each paper:

1. Physical Activity Planning:

- Proposal: Application for daily physical activity planning using fitness trackers.

- Method: Random Forest clustering for user grouping, Linear–quadratic regulator algorithm for alternate plans.

- Components: Online (Android app, target probability prediction), Offline (clustering, predictive models).

2. MineTime Insight:

- Proposal: Visual analytics tool for corporate meeting distribution using MineTime.

- Features: Analyzes meeting patterns, provides statistical representation, identifies meeting history and goals.

3. Intelligent Daily Scheduler:

- Proposal: Mobile app for personalized weekly timetables based on user routines.

- Method: Deep Neural Network (DNN) predicts daily schedule patterns, Load Balancing for even task distribution.

4. Content-Based Recommendation System:

- Proposal: Recommender system for daily/weekly plans based on user-rated task types.

- Method: Phi correlation coefficient analysis, recommends top positively ranked task types.

5. Adaptive Planning with Chatbot:

- Proposal: Chatbot-driven adaptive planning using a user story graph.

- Method: Fibonacci sequence for story points, sprint planning, bottleneck detection, and adaptation.

6. Intelligent Timetabling Scheduler:

- Proposal: Web-based application for university timetables using Genetic and Graph Coloring algorithms.

- Features: Avoids clashes, allocates resources iteratively, compares algorithm performance.

7. Algorithm for Daily Routine Scheduling:

- Proposal: Algorithm for scheduling daily routines with temporal constraints and dependencies.

- Method: Backtracking, back-jumping to satisfy constraints, drawback in time consumption.

8. Optimal Agenda Algorithm:

- Proposal: Algorithm for optimal task scheduling considering spatial-temporal proximity.

- Method: Clustering, optimal solution search, expands search area for valid schedules.

9. Intelligent Calendar System:

- Proposal: System handling temporal inconsistencies in event scheduling.

- Method: Distance-based heuristics, majority voting for strategy selection.

10. Student Time Management App:

- Proposal: User-friendly app for student time management with analysis features.

- Features: Analyzes spending, tracks savings, monitors academics, provides suggestions.

11. Human Activity Recognition:

- Proposal: Method for recognizing basic and transitional activities using a sensor data stream.

- Method: Sliding window segmentation, K-Means clustering, random forest classification.

12. Survey on Activity Coaching Systems:

- Proposal: Survey on techniques used in personalized real-time physical activity coaching systems.

- Findings: Most applications lack theoretical references, use simple personalization, and lack comprehensive evaluation.

13. Nutritional Recommender System:

- Proposal: Recommender system for personalized daily meal plans based on history and preferences.

- Method: AHP Sort for food suitability, optimization for menu generation, probabilistic approach for alternatives.

14. ADL Routines Learning:

- Proposal: Neural network model (STADLART) for learning Activities of Daily Living (ADL) routines.

- Features: Outperforms KNN and K-Means, adapts to individual ADLs, detects abnormalities, advises activities.