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1. **PARTE I**

| **1. Antecedentes Personales** |
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| A continuación, se presenta una tabla en la que debes completar la información solicitada. |

| Nombre estudiante | **Alejandro Silva** |
| --- | --- |
| Rut | **21.518.908-2** |
| Carrera | **Ingeniería en Informática** |
| Sede | **Plaza Norte** |

| Nombre estudiante | **Benjamín Contreras** |
| --- | --- |
| Rut | **21.500.566-6** |
| Carrera | **Ingeniería en Informática** |
| Sede | **Plaza Norte** |

| Nombre estudiante | **Javier Castillo** |
| --- | --- |
| Rut | **21.374.107-1** |
| Carrera | **Ingeniería en Informática** |
| Sede | **Plaza Norte** |

| **2. Descripción Proyecto APT** |
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| En la descripción debes señalar brevemente el nombre de tu proyecto APT y las competencias del perfil de egreso que vas a poner en práctica. Si en tu carrera están definidas las áreas de desempeño, también menciona a qué áreas de desempeño está vinculado el proyecto. |

| Nombre del proyecto | ***Intelligent Financial Advisory Platform with Machine Learning.*** |
| --- | --- |
| Área (s) de desempeño(s) | * *Information Systems Analysis and Development.* * *Data Science and Predictive Analytics.* * *Technological Innovation in Financial Services.* |
| Competencias | * *Ability to develop technological solutions applying data analysis methodologies and tools.* * *Skill in designing, implementing, and evaluating predictive models for decision-making.* * *Ability to integrate different information sources to generate innovative solutions.* * *Data Security and Ethics.* * *A robust Quality Assurance (QA) plan.* * *Interactive Visualizations and Advanced Analytics for users.* |

| **3. Fundamentación Proyecto APT** |
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| A continuación, se presentan distintos campos que debes completar con la información solicitada. Esta sección busca que describas en detalle tu proyecto y justifiques su relevancia y pertinencia. |

| Relevancia del proyecto APT | The real estate and stock markets are in constant flux, and individuals who wish to invest face high uncertainty when deciding when to buy or sell assets. Currently, many financial decisions rely on scattered information or costly advisory services. This project seeks to create a platform that leverages Machine Learning to predict future housing prices and analyze stock market trends, providing personalized, data-driven recommendations.  The solution will impact small/new investors, families, and entrepreneurs who aim to maximize their capital while minimizing financial risks. In Chile and Latin America, where price fluctuations and market volatility are significant, having an accessible and reliable tool can provide great value. |
| --- | --- |
| Descripción del Proyecto APT | * Use an ML model to predict future property prices based on historical data and socioeconomic variables. * Implement an ML model for housing price prediction. * Integrate a stock market prediction model to analyze trends and market volatility. * Generate automatic and personalized buy/sell recommendations tailored to the user’s profile and needs. * Provide access via desktop and mobile apps, featuring an intuitive interface and clear visual reports. |
| Pertinencia del proyecto con el perfil de egreso | The project requires applying key skills in data analysis, programming, system design, and the use of artificial intelligence. It also involves project management, financial API integration, and information visualization, all aligned with the profile of a data analytics/computer science professional. |
| Relación con los intereses profesionales | This project aligns with the interest in developing innovative technological solutions and the practical application of artificial intelligence in the financial sector. It will provide experience in analyzing large volumes of data, predictive modeling, and software development, contributing to my professional growth, particularly given my strong interest in emerging technologies, data science, and innovative software development. |
| Factibilidad de desarrollo del Proyecto APT | * **Semester duration**: Development will be carried out in phases, with a functional prototype delivered at the end of the semester. * **Resources**: Real estate and stock market datasets, ML tools (Python, scikit-learn, TensorFlow), test server, development environment. * **Enablers**: Availability of public datasets and AI libraries, prior experience in software development and data analysis. * **Challenges**: Stock market prediction complexity and data cleaning; these will be mitigated using preprocessing techniques and progressive training. |

1. **PARTE II**

| **4. Objetivos** |
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| Desarrollar una plataforma de asesoría financiera que, mediante modelos de Machine Learning, prediga precios de propiedades y tendencias bursátiles para recomendar estrategias de compra y venta personalizadas. |

| Objetivo general | Develop a financial advisory platform based on Machine Learning models, capable of predicting housing prices and stock market trends, in order to generate personalized recommendations that support users’ investment decision-making. |
| --- | --- |
| Objetivos específicos | * Collect and process relevant historical real estate and stock market data. * Implement an ML model for housing price prediction. * Implement an ML model for stock market trend prediction. * Design and integrate an intuitive user interface to visualize results and recommendations. * Validate system performance using accuracy metrics and feedback from test users. |

| **5. Metodología** |
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| En el siguiente apartado deberás describir la metodología, propia de tu disciplina, que utilizarás para resolver el proyecto APT antes descrito, incluyendo las etapas y métodos de trabajo. |

| Descripción de la Metodología |
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| **Initial Planning (Sprint 0):**   * Definition of the product backlog (user stories, real estate and stock market prediction requirements, user interface). * Identification of roles: Product Owner (responsible for backlog prioritization), Scrum Master (facilitates the process), and Development Team.   **Iterative Development by Sprints (x–x weeks each):**   * **Sprint 1:** Data collection and preprocessing (cleaning, normalization, selection of relevant variables). * **Sprint 2:** Development of the housing price prediction model (regressions, neural networks, etc.). * **Sprint 3:** Development of the stock market prediction model (time series, LSTM, ARIMA, or other models). * **Sprint 4:** Integration of models into a platform (backend with API, basic frontend for visualization). * **Sprint 5:** Validation, user testing, and final adjustments.   **Regular Meetings:**   * Daily meeting (15 min) to review progress, obstacles, and next tasks. * Sprint Review at the end of each iteration to present progress to stakeholders. * Sprint Retrospective to evaluate process improvements.   **Partial Deliverables (increments):**   * Each Sprint must deliver a functional increment (e.g., cleaned dataset, trained model, visualization dashboard, etc.).   **Project Closure:**   * Final review of functionalities. * Validation of model performance with accuracy metrics. * Project documentation and delivery of the functional platform. |

| **6. Evidencias** |
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| A continuación, describe qué evidencias serán evaluadas en el informe de avance y en el informe final de tu proyecto APT. Estas evidencias deben ser acordadas con tu docente. Se entenderá por evidencia los productos que se desarrollen durante el proyecto y cuyo propósito sea visibilizar o documentar cómo se ha implementado el trabajo. |

| **Tipo de evidencia**  **(avance o final)** | **Nombre de la evidencia** | **Descripción** | **Justificación** |
| --- | --- | --- | --- |
| Final | Cronograma | Planning of activities throughout the 18-week work plan. | It shows the time planning and allows you to monitor the progress of the project. |
| Advance | Agile Report | Document that defines the formal aspects of the project regarding the agile methodology. | It demonstrates the use of Scrum, progress through iterations, and adaptability. |
| Advance | Sprint Planification | The sprint planning outlines which tasks will be completed during each sprint and how that work will be carried out. | Demonstrates internal organization, definition of tasks and clear objectives in each cycle. |
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| **7. Plan de Trabajo** |
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| En la siguiente tabla define la planificación de tu Proyecto APT de acuerdo a lo requerido. |

| **Plan de Trabajo Proyecto APT** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Competencia o unidades de competencias | Nombre de Actividades/Tareas | Descripción Actividades/Tareas | Recursos | Duración de la actividad | Responsable[[1]](#footnote-0) | Observaciones |
| IT Project Management | Preparation of the working environment | Establish project objectives, assign roles and responsibilities. | Initial meetings, project guidelines, management tools (Trello, Jira) | 1 week | Alejandro | There may be difficulties in initial coordination. |
| Data Science | Data preprocessing | Collect public datasets (real estate and stock market) and complementary APIs. | Data repositories, Kaggle, financial/real estate APIs | 1 week | Alejandro | Possible challenges with data availability or cleaning. |
| Software Programming | Architecture design | Configure libraries and frameworks. | IDEs, virtual environments, GitHub repository | 1 week | Alejandro | Ease due to the team’s prior experience. |
| Machine Learning Model Development | Training of housing price prediction models | Clean, normalize, and select relevant variables. | Python, pandas, numpy, Jupyter | 2 weeks | Benjamín | Challenges with missing or inconsistent data. |
| Software Architecture | Development of basic interface components | Define platform structure, data flow, and application components. | UML diagrams, draw.io, technical documentation | 1 week | Javier | Requires consensus among the team. |
| Machine Learning Model Development | Training of stock market prediction models | Implement and evaluate predictive models for real estate values. | TensorFlow, scikit-learn, housing datasets | 2 weeks | Benjamín / Alejandro | Difficulty in achieving accuracy metrics. |
| Software Programming | Integration of dynamic visualizations | Create an initial prototype with basic visualization features. | Frontend frameworks, graphical libraries | 1 week | Benjamín / Javier | Challenges with initial usability. |
| Machine Learning Model Development | Optimization and validation of models | Develop predictive models applied to stock market data. | TensorFlow, scikit-learn, stock market APIs | 2 weeks | Javier / Benjamín | High data volatility may affect accuracy. |
| Software Programming / Business Intelligence | Enhancements to user experience | Incorporate interactive charts connected to simulated data. | Plotly, Power BI, visualization libraries (Matplotlib, Seaborn) | 1 week | Benjamín | Integrating backend and frontend may be complex. |
| Machine Learning Model Development | Integration of models with the user interface | Improve accuracy, apply validation metrics, and perform hyperparameter tuning. | Cross-validation | 2 weeks | Javier | Computational time. |
| Software Programming | Full validation testing of the platform | Refine the interface based on usability testing. | Prototyping tools, user feedback | 1 week | Benjamín | Difficulty in achieving a user-friendly design. |
| Software Architecture / Programming | Final adjustments and overall optimization | Connect predictions with the interface for real-time delivery. | REST APIs, integration frameworks | 2 weeks | Alejandro | Complexity in data synchronization. |
| Software Quality Assurance | Project documentation | Validate model accuracy and interface usability in an integrated manner. | Testing tools | 2 weeks | Benjamín | Risk of unforeseen errors. |
| IT Project Management | Final presentation and delivery | Debug, enhance performance, and optimize. | Debugging tools, version control | 1 week | Javier | Delays may occur if tests reveal critical issues. |
| Verbal and Written Communication / IT Project Management | Preparation of the working environment | Write the technical report, user manual, and code documentation. | Microsoft Word, GitHub | 1 week | Javier | Low complexity if progress is recorded from the start. |
| Verbal and Written Communication / Project Management | Data preprocessing | Present the project and deliver all final deliverables. | PowerPoint, functional prototype | 1 week | Alejandro / Benjamín / Javier | The team has experience presenting and can rely on prior rehearsals. |

| **8. Carta Gantt** |
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| Busca un formato de Carta Gantt que te acomode y organiza en este las actividades planificadas en el punto anterior considerando el periodo asignado para el desarrollo de tu Proyecto APT. Debes mantener la temporalidad del periodo académico en el desarrollo de las tres fases que contempla la Asignatura de Portafolio de Título. |

| **Actividad** | **Fase 1** | | | | **Fase 2** | | | | | | | | | | | | **Fase 3** | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S 1** | **S 2** | **S 3** | **S 4** | **S 5** | **S 6** | **S 7** | **S 8** | **S 9** | **S 10** | **S 11** | **S 12** | **S 13** | **S 14** | **S 15** | **S 16** | | **S 17** | **S 18** |
| Definition of project scope and team organization |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Collection of initial datasets |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Preparation of the working environment |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Data preprocessing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Architecture design |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Training of housing price prediction models |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Development of basic interface components |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Training of stock market prediction models |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Integration of dynamic visualizations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Optimization and validation of models |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Enhancements to user experience |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Integration of models with the user interface |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Full validation testing of the platform |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Final adjustments and overall optimization |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Project documentation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| Final presentation and delivery |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |

1. En caso de que el Proyecto APT sea grupal, en esta columna deben indicar el nombre de los responsables de cada tarea o actividad. Esto posteriormente permitirá diferenciar la evaluación por cada integrante. [↑](#footnote-ref-0)