Print Signatures For Document Authentication

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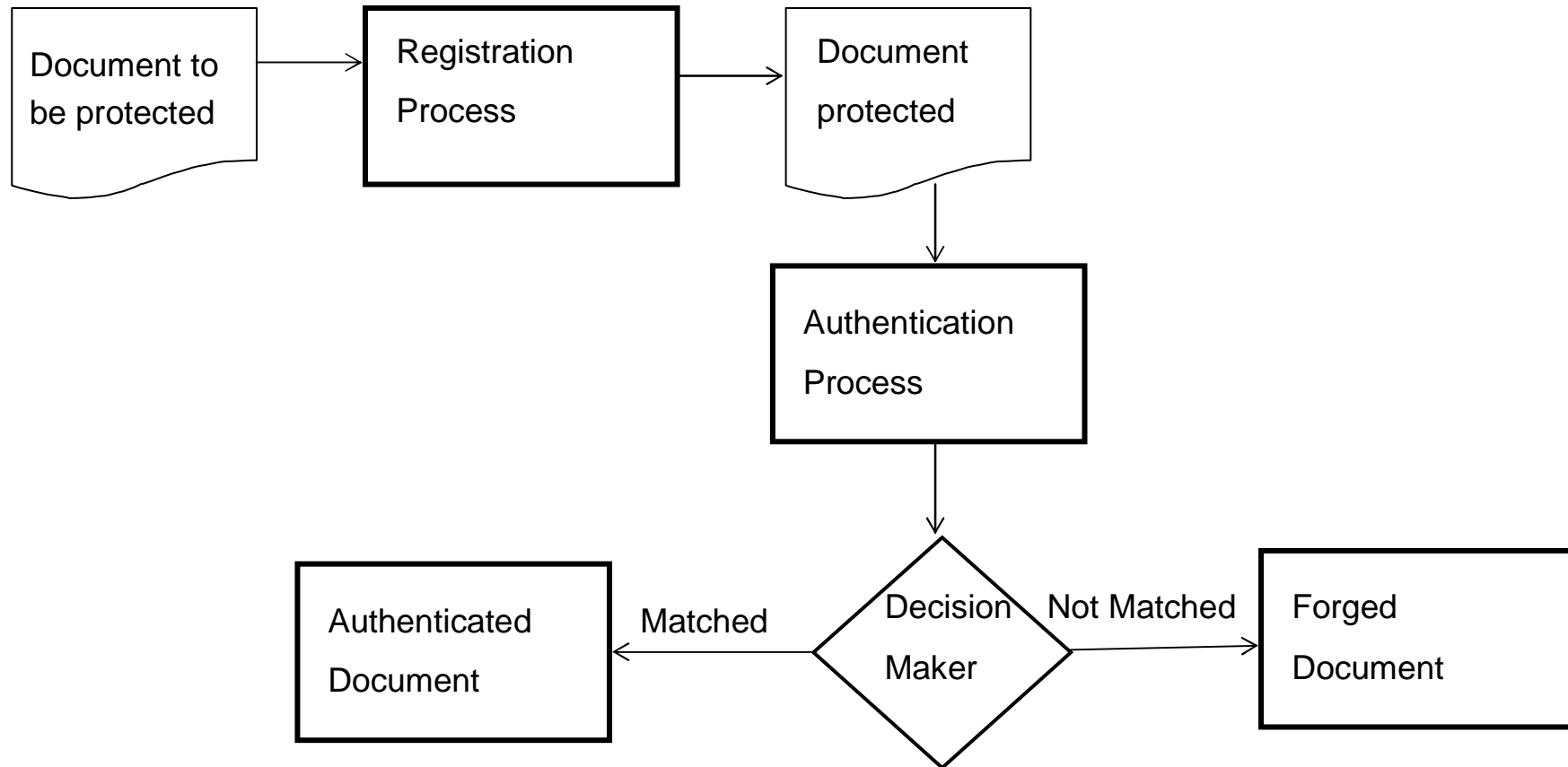
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Summary

➢ Solution for authenticating printed paper documents by utilizing the inherent non-repeatable randomness existing in the printing process.

➢ Secured using both digital and print signature.

➢ Secured against forgery and duplication attacks.

Appreciative Comments

- ➢ The article gives the overview of the process of the print signatures with experimental results to demonstrate the feasibility of the method.

- ➢ The author presents theoretical and experimental details on how to register and as well as authenticate this print signature.

System diagram

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┌──────────────┐        ┌──────────────┐        ┌──────────────┐
│ Document to  │───────▶│ Registration │───────▶│ Document     │
│ be protected │        │ Process      │        │ protected    │
└──────────────┘        └──────────────┘        └──────┬───────┘
                                                       │
                                                       ▼
                                                ┌──────────────┐
                                                │ Authentication│
                                                │ Process       │
                                                └──────┬────────┘
                                                       │
                                                       ▼
┌──────────────┐   Matched      ◇ Decision ◇  Not Matched  ┌──────────────┐
│ Authenticated │◀──────────────│   Maker   │─────────────▶│ Forged       │
│ Document      │                ◇─────────◇               │ Document     │
└──────────────┘                                           └──────────────┘
```

Appreciative Comments Contd..

Advantages of print signature.

- ➤ **Security**: It's unique for each printed document. Any duplication attempt can be detected in authentication process.

- ➤ **Convenience**: Incorporated in handheld devices for manual operation.

- ➤ **Low Cost:** It works on any ordinary laser printers. Doesn't require any special material.

Application of print signature

➢ It is suitable for applications that require documents to be protected against unauthorized duplications. Such as bill of lading, online ticketing, lottery tickets, voting ballot paper.

Criticism

➢ The author didn't compare his results and analysis with other articles on the same topic to produce reliable conclusions.

➢ The author used many mathematical algorithms for profile matching and feasibility analysis which were quite hard to follow (Otsu's algorithm, Gaussian distribution, Bera-Jarque Normality test).

Question?

➢ Print signature as an authenticating technique in the paper based world, how does it create new possibilities in the electronic world?

➢ As the laser printing technology improves, the printing resolution will become even higher, can we still expect to see the random phenomenon on each copy of printed-paper?