

TOWARDS ARGUMENTATION-BASED RECOMMENDATIONS FOR PERSONALISED PATIENT EMPOWERMENT

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BACKGROUND

Patient empowerment is a key issue in healthcare demanding (i) awareness of patient's role, (ii) acquisition of knowledge, (iii) patient's skill, and (iv) a suitable (technological) environment.

The ArgoRec Recommender System (RS) aims at delivering personalised healthcare to Complex Chronic Patients (CCP) by leveraging **argumentation** to enable justifiable and personalised recommendations.

Argumentation is interaction through dialogue: making claims, attacking others' ones, and providing premises supporting own ones, with the goal of winning a debate.

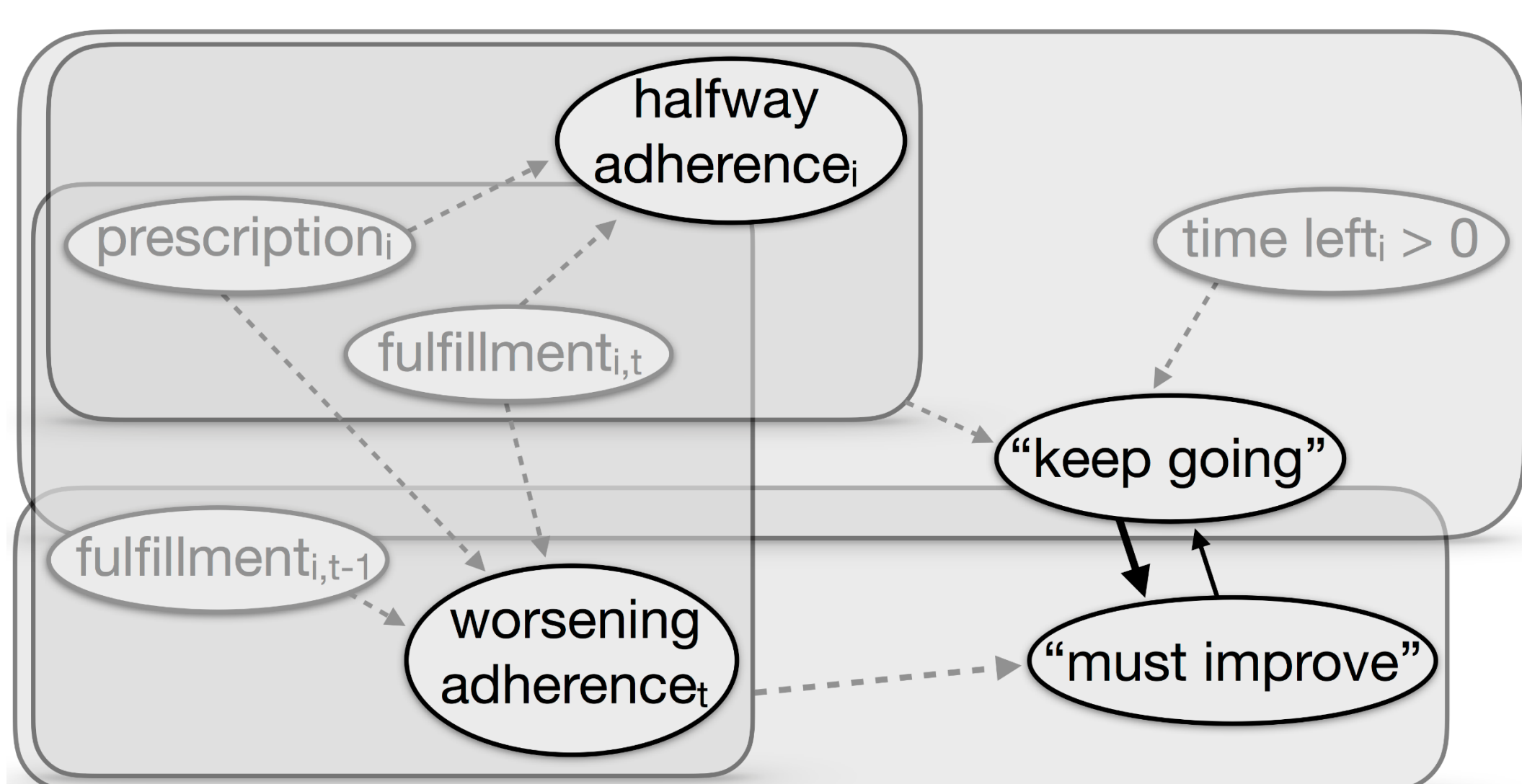
SOLUTION

We exploit **computational argumentation** -- that is, automatic reasoning over arguments graphs -- to empower RS along two dimensions:

- **explanatory power**, by enabling ArgoRec to describe the “why & how” a specific recommendation has been given
- **user experience**, by interacting with patients through natural language sentences generation

In ArgoRec **recommendations** are interpreted **as arguments**:

- **claims are recommendation goals** (the message)
- **premises are adherence to prescriptions** (automatically computed)
- support relations strength depends on many factors, i.e. time windows for computing adherence profiles
- attack relations are due to conflicting recommendations based. i.e.. on different

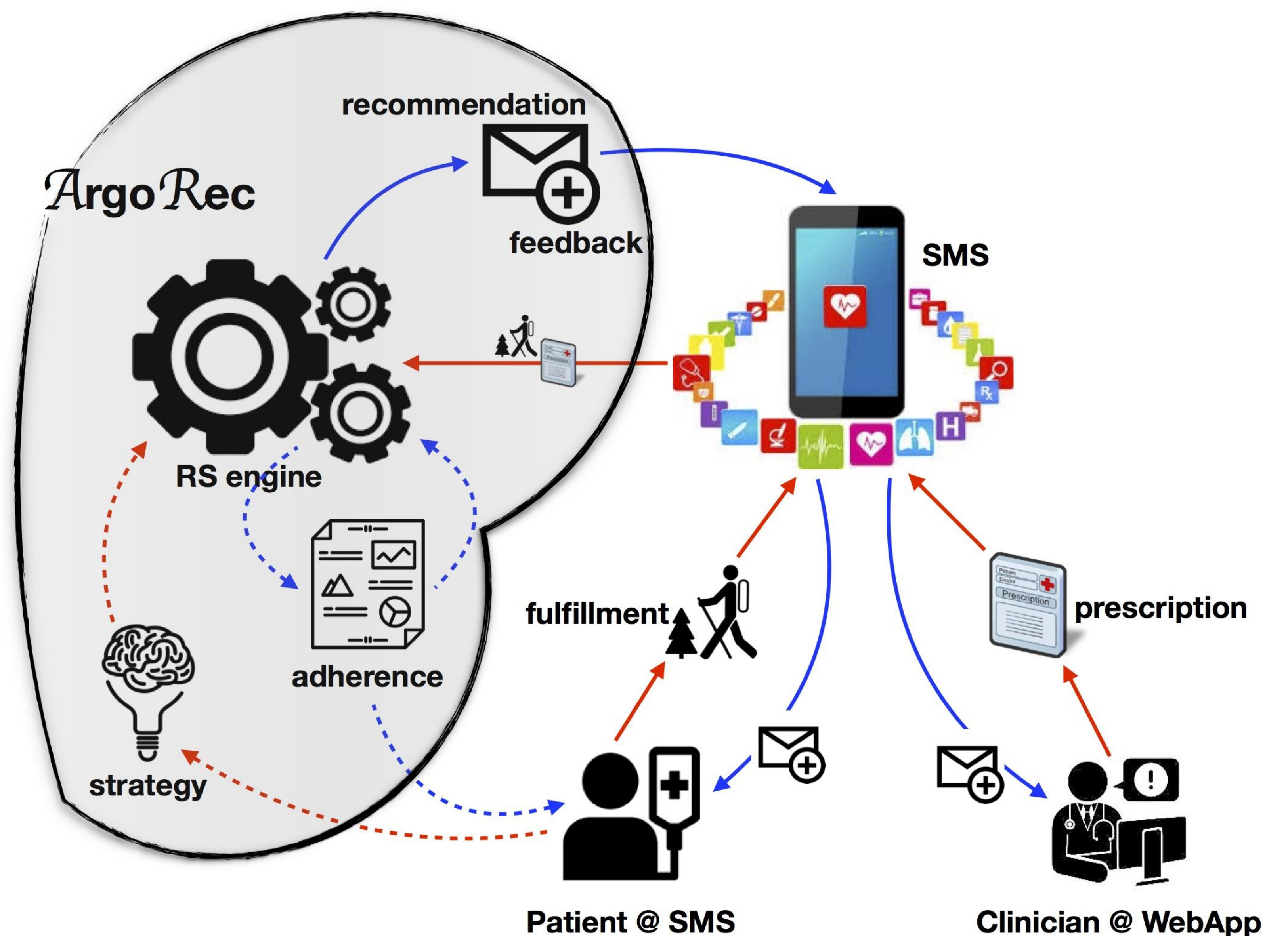


METHOD

ArgoRec can motivate / explain reasons for recommendations and provide to clinicians insights on decision making by navigating the argumentation graph while exploiting NLP and Argumentation Mining.

For doing so, ArgoRec works as follows:

- a **prescription fulfillment** notification is received
- it is checked against its prescription to **compute adherence**
- arguments are generated and added to the **argumentation graph**
- strength of relations are updated
- recommendations are generated accordingly



KEY BENEFITS & CHALLENGES

- ✓ ArgoRec **reduces fear of algocracy** through explanations and justifications
- ✓ ArgoRec **enables autonomous learning** through associated rules discovery and statistical relational learning
- ✓ ArgoRec improves patients' user experience through **argumentation-based natural language generation**
- ❖ ...but, research in **computational argumentation is mostly theoretical**
- ❖ ...**social and organisational factors** should be taken into account besides technological ones for promoting adoption



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