**a). Insert the appropriate verbs in the appropriate forms in the gaps. If necessary, add a modal verb in the gap.**

**b). Punctuate the sentences if necessary.**

**A.** *Creating Autonomous Adaptive Agents in a Real-Time First-Person Shooter Computer Game*

**Conclusion**

In this paper we **have** **described** how we **create** intelligent agents to play a well-known first-person shooter computer game and to learn in real-time from the interaction outcomes perceived in the game environment only. The term ‘intelligent’ **may/can** have different meanings from different perspectives. In our work it **refers** to the ability and the quality of self-adaptive learning and the reliability of decision-making. **(may, describe, refer, create)**

Our agents **employ** two reinforcement learning networks to learn knowledge on behavior modeling and weapon selection, respectively. Both networks can learn from scratch or with preinserted knowledge. In the experiment section we first **showed** that using our proposed combinatorial operations rather than the conventionally applied operations **enables** our agents to learn more appropriately and effectively. After that we **showed/show** how different values of certain critical parameters **can** **affect** the performance. The general set of parameter values **is** then applied to all the other experiments presented in this paper. By applying the self-acquired knowledge on weapon effects, our agents **perform** at the same level as using the predefined expert weapon preference knowledge stored in the game server. With different game configurations but the same set of parameter setting we **show** that the performance of our agents **is** encouraging when playing against different opponents in different maps. Furthermore we **demonstrate** that our agents **can** **adapt** quickly to a new opponent in a new map if the previously learned knowledge **is** **retained** **(demonstrate, adapt, affect, perform, show-3, enable, be-2, retain, employ)**

Our agents currently **do not utilize** the information about physical locations based on past experiences. In the future we **will/could/would add** a new control module to function as the episodic memory [42]. Therefore the agent **will/would/could** gradually **discover** its preferred places in the map where useful items are available for collection or locations suitable for ambush. **(discover, add, be, utilize)**

In the future we also **could try out** different strategies to implement our agents, such as applying the UCB1 [43] or selfregulated action exploration [44] strategies as the new action selection policy. **(try out)**

Last but not least we **could extend** the number of agents in control. We **can create** a team of agents to play in the Domination [8], [22] or Capture The Flag game scenarios. In those scenarios the difficult problem is **to give** effective commands to form the best team collaboration rather than to control the individuals. It **will be** even more challenging if each individual **has** its own specialties and preferences. **(create, be, have, give, extend)**

**B.** *Feature-based Opinion Mining and Ranking*

**Conclusion**

With the proliferation of social networking and e-commerce the information contained in the opinions/reviews expressed by the people **has grown** by leaps and bounds. In this work we **have presented** an opinion search engine system that **have** **incorporated** two novel opinion mining algorithms. The opinions **were based** on features and the orientation of these opinions **was** also largely **based** on the features rather than a product as a whole. People seem to like/dislike a specific product because of some feature associated with the product. The proposed framework not only **classifies** a review as positive or negative, but also **extracts** the most representative features of each reviewed item, and assigns opinion scores on them. An initial experimental evaluation on several customer review data sets **has shown** that our algorithm **has achieved** very high levels of accuracy. **(base – 2, present, achieve, incorporate, classify, show, grow, extract)**

Our plans for future work **include** experimenting with datasets from other social media, as discussed in Section 4.3. We also **plan** to further explore the idea of focusing on particular parts in a user’s expressed opinion (e.g. the parts that **are** most **commented** on) and extract features from there instead of the whole text. **(plan, comment, include)**

**C.** *Forensic Analysis of Water Damaged Mobile Devices*

**Conclusion**

While many devices arrive at digital forensics labs with water damage to our knowledge no comprehensive investigation of the device level effects of metal corrosion **has been conducted** previously. Through this study we **have documented** the internal reactions that occur in digital devices when they have been in contact with water. Electrochemical migration (ECM) happens when potential bias and water coexist with digital devices. In order to minimize the continuing damage caused by ECM the power supply namely the battery needs to **be removed** in a timely manner when handling a water damaged device. Additionally it needs **to be noted** that longer submersion time creates more metal corrosion, which **makes** device recovery processes much more difficult.

**(be, make, remove, document, note, conduct)**

When handling a water damaged device at a digital forensic lab, contaminants namely the metal corrosion products in the device need **to be removed** in order to avoid further damaging the device due to short circuits. In addition close investigation of the printed circuit board (PCB) components, especially those that require continuous and/or high voltage, **needs** to be conducted in order to identify faulty components and open circuits. If the device **is missing** critical electrical components required for booting, or the corrosion is severe enough to cause the loss of conductive metals on the PCB at multiple locations, chip-off or chip transplantation **would be** the last options. A clear understanding of metal corrosion **can help** ensure first responders and forensics investigators appropriately handle and analyze water damaged devices. Proper handling of water damaged devices during forensic analysis significantly **improves** the odds of successful data extraction.

**(miss, help, be, improve, remove, need)**